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This report summarized a sample of vocational development research, centering on the work of D.E. Super, and D.V. Tiedeman and colleagues, from 1950 to 1962. Selected works representing other points of view are also included in the summary. The material is organized in two parts: (1) a theoretical discussion of the field of vocational development, placing and relating the contributions of various researchers and theoretical positions, and (2) abstracts of selected studies, including in each the theoretical orientation, hypotheses, subjects, and a summary of method and results. A bibliography follows. (BP)

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THE UNIVERSITY OF NEW SOUTH WALES

SOME TRENDS IN VOCATIONAL DEVELOPMENT RESEARCH

by

K. L. Underwood

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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STUDENT COUNSELLING AND RESEARCH UNIT

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THE UNIVERSITY OF NEW SOUTH WALES

Student Counselling and Research Unit

SOME TRENDS IN VOCATIONAL DEVELOPMENT RESEARCH

By:
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FOREWORD

Vocational interests have been the subject of much serious study over the past thirty years by psychologists concerned with the counselling and guidance of young people. There is no doubt that interests are important for vocational success but what they are, how they develop and the best method of assessing them has challenged both research workers and practitioners. Many kinds of approaches have been made ranging from direct empirical studies to structural and dynamic personality theorising and experimentation.

In recent years a change in emphasis has become apparent. Empirical work based on a minimum of theory has given place to new approaches exploring psychodynamic factors in the development of vocational interests and the process of vocational choice.

These have taken the form of more vigorous scientific investigation of clinical concepts such as ego strength, basic psychoanalytic processes and the self concept and the possible significance of self acceptance to vocational choice.

This bulletin presents an account of some of the research stimulated by this change. An additional section relating to possible decision theory applications has been included. The report has been prepared in the expectation that an account of these more recent trends may be both valuable and interesting to practising counselling and guidance psychologists.

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INTRODUCTION

1. A Brief Historical Note

It is difficult to designate a starting point for a research trend which has so patently developed from a number of influences. The "vocational development movement", a term used by Borow (13, 14), emerged from dissatisfaction with the traditional actuarial approach to vocational guidance and sought to incorporate developmental and self psychology concepts in its research into the psychological meaning of vocationally relevant behaviour. Super is the founder of this movement. His approach is interdisciplinary. His integration of relevant features of education, industrial sociology and the various "psychologies", viz., developmental, personality and clinical, and differential into a theoretical framework marks the starting point. Formal planning of the Career Pattern Study, the concrete expression of this integration, commenced in 1949 (109).

The first of the Harvard Studies in Career Development (123) appeared in 1952. It is concerned with the application of discriminant analysis to guidance problems and is followed by a number of other studies using the same method (21, 31, 38, 124). In the last of this series (21), the authors report that, had they fully appreciated Super's formulation, different variables would have been chosen for study. Concurrently, interest in the self concept became evident (see Appendix VIII), a research issue which now seems to predominate in the Harvard Studies.

Roe is well known for studies of eminent scientists (89, 90, 91) and, at that point, her methods were a mixture of objective and projective tests, interview data and clinical interpretation. Her interest in the personality of occupational groups (88) predates 1949. In her theory of vocational choice (94) an important role is accorded to non phenomenal factors, a position somewhat at variance with the self report data of the phenomenal self concept studies of the "movement". Her inclusion in this report is justified on two grounds:-

(1) tests of her hypothesis use self report data (e.g., 120, 129); and

(2) she is now (from 1962) a joint director with Tiedeman of a new Harvard centre for the study of careers (35).

A diagrammatic representation of influences and trends in this area of research is given in Appendix I. Such a diagram admittedly oversimplifies and possibly misleads. The reader not familiar with this work may, however, find it useful.

Other contributors, e.g., Holland (53, 54, 55, 56), Tyler (125, 126, 127, 128), Small (103), are less clearly related to this group. And Bordin and his colleagues (11, 40, 77, 101) represent a quite different approach.

2. Purpose, Scope and Presentation of Material

The report summarises a sample of the research executed within the framework of the vocational development movement. It centres on the work of D.E. Super (Columbia Teachers' College) and D.V. Tiedeman (Harvard University) and their colleagues and covers the period 1950 to 1962. Others are included, viz., Roe, Holland and the psychoanalytically oriented Michigan group - Roe for the reasons already mentioned, Holland because at times his position is close to that of a self concept implementation view of vocational choice and Bordin and his colleagues because they represent a position so different from that of the self concept theorist. A section relating to career decision making models and possible applications of decision theory is also included.[1]

The material is presented in two parts:-

(1) Part I gives a narrative account beginning with Ginzberg, then proceeding to Super with particular emphasis on the Middletown Career Pattern Study and the concept of vocational maturity. Next come Roe's theory of vocational choice, various tests of her theory, Holland's theory and then the Michigan psychoanalytically oriented studies. Some miscellaneous personality studies are also reported. The Harvard and self concept studies follow. The final section in Part I refers to descriptive decision models and includes a sample of decision theory studies.

(2) Part II supplies more detail about a selection of the studies.

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[1] No suggestion is intended that decision theory, in its present form, is ready for application to career decision making. In fact, Earl (Earl R.W. Decision theory and utility management, Review of Educational Research, 1963, XXXIII, 556-565) comments that ten to fifteen years will elapse before any marked applications of decision theory will be made to the problems of the educationist or the counsellor. Descriptive, not normative, decision models seem more fruitful at this stage.

Reference to decision theory is incongruent with the developmental and self psychology orientation of this report. Since, however, it is suggested as a possible field of future interest to the vocational psychologist (16) and is one which may not be as well known to the guidance/counsellor as other strands, e.g., "new look" trait and factor research, it is thought that inclusion of some examples is justified.

Theoretical orientation, formally stated hypotheses, subjects, method and results of each study are given. Naturally such details cannot be fully reported in a document of this size. Several studies not referred to in Part I are included to illustrate other research trends, e.g., work value orientation (62, 63, 81), occupational stereotypes and dimensions of job perception (42, 130).

This document is intended primarily for the guidance/counsellor requiring a more detailed presentation of this research than appears in the usual reviews, viz., Annual Review of Psychology, 1963, 319-350; Review of Educational Research, 1963, XXXIII, 197-204. It may, of course, be of interest to others as well. The presentation is descriptive, seldom evaluative. Some observations are included at the end of Part II.

The report makes no original contribution and is, in fact, the result of a literature survey. Its objectives are to provide:-

(1) an account of main trends in vocational development research;

(2) for a selection of the reviewed research, more detail about method and design; and

(3) a bibliography of some 130 references which furnish an appropriate and, it is hoped, adequate base for further study in this area.

A final comment: the reported research is a sample from a significant strand of vocational psychology. It by no means covers all areas relevant to the problem of vocational choice and development. A casual inspection of the bibliography indicates that references have been drawn principally from the Journal of Counseling Psychology and the Personnel and Guidance Journal. Few references have been taken from the Journal of Applied Psychology. The first mentioned journals have become the main vehicle for reporting this particular research interest.

References to psychological tests are abbreviated:-

SVIB - Strong Vocational Interest Blank

DAT - Differential Aptitude Tests

MMPI - Minnesota Multiphasic Personlity Inventory

AVL - Allport-Vernon-Lindzey Study of Values

VPI - Vocational Preference Inventory (J.L. Holland)

PART I

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Ginzberg's Theory of Vocational Choice

The Ginzberg monograph on occupational choice appeared in 1951.[1] It is based on a sample of 91 cases made up of 64 boys, aged 11 to 24, of upper socio economic status, high intelligence and ethnically impeccable background - in short, subjects handicapped as little as possible by environmental circumstances in their choices; 17 high school boys in a settlement house population and 10 college girls. It is concerned with the choice process, leaving entry and adjustment to other research workers. The method of data collection is by interview of about one hour's duration.

The main elements of the theory are:-

(a) occupational choice is a development process which typically takes place over a period of many years, about 10 in number;

(b) this process is largely irreversible; by this is meant that experience cannot be undone, it produces change in the individual. The psychological implications of irreversible elements are not clarified. Roe (93), for example, has question irreversibility if it implies lack of flexibility and Tiedeman (122) in his study of the hypothetical structure of the decision process clearly allows for reversibility;

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[1] E. Ginzberg is the senior author. His colleagues in the project are J.W. Ginsburg, S. Axelrad and J.L. Herma. At the time of preparing this report, Ginzger's monograph was not available. The main elements of his theory are taken from Roe (93) and Super (108).

(c) the process of choice ends in a compromise between interests, capacities, values and opportunities; and

(d) there are 3 main developmental periods relevant to occupational choice:-

(i)	fantasy choices	-	6 to 11 years
(ii)	tentative choices	-	12 to 17 years
(iii)	realistic choices	-	18 years and older

Fantasy is dominated largely by the wish to be an adult; tentative period choices are determined largely by interests, then capacities and then by values; the realistic period is characterised by phases in which exploration, crystallisation and specification succeed each others. In more concrete terms, fantasy choices are represented, for example, by the wish to be an engine driver. In the tentative period the young person recognises the problem of deciding upon a future career but his choices are still made with little reference to reality. Psychologically, such choices are seriously intended but seldom translated into effective action. Realistic choices concede the importance of environmental opportunities and represent a compromise between these and the young person's aspirations.

Ginzberg and his associates have been criticised by a number of workers. Caplow (20) emphasises the limited empirical background of the formulations and contends that the representation of periods and stages should be accepted, at this stage, as hypothetical. He raises a number of questions:-

(1) Do all individuals pass through these phases?

(2) Crystallisation, the process by which meaning attaches to psychological data, occurs at various age levels depending upon situational circumstances and emotional involvement.

(3) Fantasy choices are stylised and stereotyped. Do they in fact have any significance for choice behaviour? The existence of these fantasy choices is amply attested in developmental studies, e.g., Gesell, Ilg and Ames (41).

(4) Realistic choices involve abandonment of old aspirations in favour of more limited objectives allowable in terms of the environment. This abandonment, viewed against the total career pattern, may be temporary. Thus, realistic

> choice may not be final as far as personal occupational aspiration is concerned. Vocational development is a continuous process of raising and lowering of goals.

Elsewhere (19), Caplow is critical of (1) the accidental nature of the interviews which seem more descriptive of current vocational attitudes than adequate as a history of occupational choice (2) "woeful ignorance" of the facts of occupational life in American society, viz., that most American adults shift occupations during their careers (3) poor methodology. "Most of the book is taken up with pure theorizing and much of it is excellent. The subjective aspects of occupational choice have been the occasion here of intense and insightful reflection. Had the sequence theory been presented as a hypothesis ... its value as a background for serious research would be evident and unquestionable."

Super (108) criticises Ginzberg for his neglect of the extensive extant literature on inventoried interests. He objects to the loose usage of choice pointing out that choice at age 14 is obviously different from choice at age 21. "To the 14 year old it (choice) means nothing more than preference, because at that age the need for realism is minimised by the fact that the preference does not need to be acted upon until the remote future. To the 21 year old student of engineering, on the other hand "choice" means a preference which has already been acted upon in entering engineering school, although the final action will come only with graduation and entry into a job. No wonder reality plays a larger part in choice at age 21, when, unlike choice at age 14, it is by definition a reality tested choice." A similar objection is made by Roe (93).

Additional criticisms by Super centre on the artificial distinction between choice and adjustment. If choice is a continuous process involving increasing reality with increasing age, it seems more consistent with the facts to regard choice and adjustment as blending in adolescence "with now the need to make a choice and now the need to make an adjustment predominating in the occupational or life situation."

Darley and Hagenah (28) refer to Ginzberg's disregard for research literature, the dubious value of research methods and the inadequacies of the sample. Small's (103) study of the vocational choices of adjusted and disturbed adolescents (his subjects' age range is 15 to 19 years) tends towards compensatory balances of realism and fantasy in the late adolescent period rather than restricting fantasy choices to behaviour before age 11.

Ginzberg's theory regards occupational choice as a compromise between certain vocationally relevant attributes. Failure to specify the nature of compromise has stimulated both speculation and criticism. Super (108) censures failure to investigate and specify the nature of the compromise and proposes self concept implementation (114) while at the same time recognizing the difficulty of testing hypotheses concerning the self concept (118). Blau (8) refers to the balancing of vocational aspirations and expectations and Small (103) locates compromise as a function of ego strength. Beilin (5), writing in 1963, feels constrained to observe that Ginzberg's "compromise" statement of 1951 formally sets down the problem for investigation, though he now apparently prefers a research orientation expressed in cognitive terms.

Although Ginzberg's theory has been criticised on a number of grounds (see (70) for a summary of literature critical of the Ginzberg monograph), it stimulated thinking and research about the problems of vocational development. Some ten formally presented theories of vocational choice have emerged (26) - in sharp contrast to Ginzberg's observation that vocational psychologists are not concerned with theory - and both the Career Pattern Study and Harvard Studies in Career Development acknowledge Ginzberg's influence and contribution. Super's verdict: "Ginzberg's theory is indeed an important contribution" is unambiguous. Additionally since it represents an interdisciplinary approach, it potentially recognizes the realities of societal demands in vocational choice though actually failing to do so in its sampling. "The process (of how occupational choices are made) has roots in the interplay of the individual and reality, and this field is only now beginning to be included in the boundaries of psychological reality. The obverse formulation applies to economics, which as a discipline concentrates on a detailed analysis of reality forces and satisfies itself with a few simplified assumptions about individual behaviour." That the disciplines of sociology, economics and psychology do contribute to a conceptual framework within which occupational choice research may be executed is demonstrated by Blau (8) in a paper now adjudged one of the three most significant contributions of the last decade (16). As a further example, Super's formulations attempt not only a rapprochement of developmental, personality and differential psychologies but also recognise the roles of education, industrial sociology and labour economics (108, 118).

D. E. Super and the Career Pattern Study (Refer to Appendices II and III)

Borow (13, 14) ascribes to Super the role of founder of the "vocational development movement", a phrase coined by the former to describe attempts by vocational psychologists to locate their discipline in the mainstream of psychological thinking. Preoccupation with trait theory and with the development of statistical procedures appropriate to the regression version of the occupational prediction model resulted in vocational psychology losing contact with psychological theory (115). To speak of a movement, however, implies unity and principlies by which "membership" may be determined. Although themes are detectable, e.g., self theory and its related concepts of role, identity formation and self concept; need theory;

career patterns; developmental psychology; vocational development tasks; study of childhood experiences and need satisfaction; and the research superiority of longitudinal studies, Borow makes it clear that not all workers writing within the framework of the movement subscribe to the descriptive principles of career development as a unified set (13). Indeed, one can imagine that Roe and the psychoanalytically oriented Michigan group whose work or its origins predate the movement and who qualify for inclusion in terms of Borow's descriptive principles may well argue for separate existence even though Roe has now formally joined the Harvard group.[1] Thus, inclusion in the movement seems to allow pursuit of discrete interests provided they represent departure from but not necessarily rejection of the "older, sterile, trait-measurement model".

Turning, then, to the man described as the founder of this movement. Super conducted a review of the research literature to answer specific questions posed by Ginzberg and his associates. While he agrees with Ginzberg's broad criticism relative to theory construction in vocational guidance he does not consider that vocational guidance and counselling operate entirely without theory. His analysis of guidance publications prior to the appearance of the Ginzberg monograph demonstrates the ancestry of the main elements of Ginzberg's theory in the work of earlier vocational psychologists (108).

He acknowledges the influence of previous workers in the development of his thinking, e. g., Carter's study of development of vocational attitudes, Buehler's life stages, Lazarsfeld's genetic method of studying occupational choice, Norton and Dysinger's contributions to vocational maturity, Ginzberg's refinement of the choice concept as a development process and the life and career pattern studies of sociologists (109, 118).

Super[2] observes that, up to the time the Ginzberg monograph appeared, vocational psychology depended heavily on the concepts of differential psychology. While trait theories have been refined by factor studies and have contributed and will continue to contribute much of value to vocational psychology, there are other approaches suggested by developmental psychology, the psychology of adjustment, life and career patterns from sociology which will permit synthesis of the data accumulating about a person in the course of his development. If it is accepted that the vocational psychologist is concerned with (1) prediction of behaviour and (2) understanding behaviour and facilitating behaviour change, then these two concerns represent legitimate avenues for research.

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[1] Brayfield (16) separates the personality oriented theories from the vocational development studies, a separation which he recognizes may be artificial. If one chose to regard Super and Tiedeman, who constitute the backbone of the "movement", as self concept and identity theorists then the "movement" might well be denuded of its membership.

[2] The account of Super's views about vocational development is taken from 108, 114, 115 and 118.

For the first, life pattern data reflecting behaviour and roles over a period of time can be collected and analysed to ascertain persistent and recurrent themes. If data is assembled for a sufficient number of cases, discernable life or, for this purpose, career patterns will emerge (see Miller and Form (74)) which can be related to significant psychological and social variables found to operate as determinants. Since, in Super's view, statistical prediction is superior to clinical prediction the ultimate objective is a career prediction model based upon an appropriate statistical model. Basically, such a model must provide for prediction from several points in time to a later series of points in time as opposed to the regression and discriminant function versions of the occupational prediction model which predict from one point in time to another, regarding the latter as though it is the equivalent of a career. To make the career prediction model operational at this stage, Super proposes the thematic-extrapolative method, a term selected somewhat reluctantly, by which recurrent themes and underlying trends in personal development are analysed from data collected by interview and other assessment procedures and then presumably related to statistical analysis of normative career pattern data. The career prediction model is an unresolved issue in career development research (115), and awaits more knowledge about career development and its determinants as well as appropriate statistical vehicle.

For the second concern, Super suggests a developmentally oriented approach. Career development is ongoing, continuous and generally irreversible; it is an orderly and patterned but nonetheless dynamic process with the person bringing to bear upon a vocational development task his potential for and repertoire of behaviour; what is learned in the experience, which is related to the degree of success or failure in handling the task, is added to or modifies the existing repertoire of behaviour. To understand ongoing vocational behaviour and development Super proposes examination of a large number of possible determinants reflecting roles, self, personal and situational factors. He attributes a central position to the self concept in choice: "the process of vocational development is essentially that of developing and implementing a self concept". The self concept is what the person conceives himself to be and as such is differentiated from the self as conceived by others. It is the product of growth processes and personal-social development, ". . . of the interaction between inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows".

To make his developmental and associated life stage approach meaningful Super provides a scheme of vocational life stages based upon a synthesis of the ideas of Buehler, Ginzberg and Miller and Form (118):

"1. Growth Stage (Birth to 14)

Self concept develops through identification with key figures in the family and in school; needs and fantasy are dominant early at this stage; interest and capacity become more important with increasing social participation and reality testing.

Substages are:-

Fantasy (4-10 years)	Needs are dominant: role-playing in fantasy is important.
Interest (11-12 years)	Likes are the major determinants of aspirations and activities.
Capacity (13-14 years)	Abilities are given more weight and job requirements (including training) are considered.

2. Exploratory Stage (15-24 years)

Self examination, role tryouts and occupational exploration take place in school, leisure activities and part-time work. Substages are:-

Tentative (15-17 years)	Needs, interests, capacities, values and opportunities are all considered. Tentative choices are made and tried out in fantasy, discussion, courses, work, etc.
Transition (18-21 years)	Reality considerations are given more weight as the youth enters the labour market or professional training and attempts to implement a self concept.
Trial (22-24 years)	A seemingly appropriate field having been located, a beginning job in it is found and is tried out as a life work.

3. Establishment Stage (25-44 years)

Having found an appropriate field, effort is put forth to make a permanent place in it. There may be some trial early in this stage, with consequent shifting, but establishment may begin without trial, especially in the professions. Substages are:-

Trial (25-30 years)	The field of work presumed to be suitable may prove unsatisfactory, resulting in one or two changes before the life work is found or before it becomes clear that the life work will be a succession of unrelated jobs.
Stabilization (31-44 years)	As the career pattern becomes clear, effort is put forth to stabilize, to make a secure place in the world of work. For most persons these are the creative years.

4. Maintenance Stage (45-64 years)

Having made a place in the world of work, the concern is now to hold it. Little new ground is broken, but there is continuation along established lines.

5. Decline Stage (65+)

As physical and mental powers decline, work activity changes and, in due course, ceases. New roles must be developed; first that of selective participant and then that of observer rather than participant. Substages are:-

Deceleration (65-70 years)	Sometimes at the time of official retirement, sometimes late in the maintenance stage, the pace of work slackens, duties are shifted, or the nature of work is changed to suit declining capacities. Many men find part-time jobs to replace their full-time occupations.
Retirement (71+)	As with the specified age limits, there are great variations from person to person. But, complete cessation of occupation comes for all in due course, to some easily

> and pleasantly, to others with
> difficulty and disappointment,
> and to some only with death. "

Associated with life stage is the concept of developmental task. At each stage, certain tasks or challenges confront a person. Decisions he makes, or fails to make relevant to these tasks matter most for his future. The concept of the developmental task has been used in education. It seems, at least philosophically speaking, to lie somewhere between extreme individuality, i.e., that the individual is free to satisfy his needs as he will, on the one hand, and rigid constraint on the other, i.e., the young person learns to become a worthy citizen through restraints imposed by society. The term "developmental task"[1] is first attributed to L.K. Frank, about 1935. It refers to a task "which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society and difficulty with later tasks".

In essence, then, the concept expresses behavioural demands occuring at stages of development. These demands depend upon maturation, growth and development on the one hand, and clarity of societal requirements on the other. Havighurst details the developmental tasks typical of different periods within the life span (49). From the viewpoint of society, developmental tasks are externally imposed. As the individual matures societal expectations are internalised in the form of goals and aspirations set by the person for himself. To this extent behaviour becomes self-directed.

Super (117) provides a list of developmental tasks some of which presumably will be expanded or amended in the light of data gathered in the Career Pattern Study (Appendix III):

Preschool Child

Increasing ability for self help.
Identification with like sexed parent.
Increasing ability for self direction.

Elementary School Child

Ability to undertake co-operative enterprises.
Choice of activities suited to one's abilities.
Assumption of responsibilities for one's acts.
Performance of chores around the house.

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[1] A brief account of the history of the term is given in reference (49), pages 328-332.

High School Adolescent

Further development of abilities and talents.
Choice of high school or work.
Choice of high school curriculum.
Development of independence.

Young Adult

Choice of college work.
Choice of college curriculum.
Choice of suitable job.
Development of skills on the job.

Mature Adult

Stabilisation in an occupation.
Providing for future security.
Finding appropriate avenues of advancement.

Older Person

Gradual retirement.
Finding suitable activities for skills to occupy time.
Maintaining self sufficiency in so far as possible.

The vocational developmental task is fundamental to Super's Career Pattern Study. The quality of vocational behaviours elicited by tasks in the Career Pattern subjects provides the basis for the assessment of vocational maturity.

Super has been criticised as a theoretician (28). His 1953 theory of vocational development (108) emerges as an orderly and valuable presentation of descriptive statements. Individual differences, the multipotentiality of the individual, the existence of occupation ability patterns, the significance of childhood and adolescent identifications in the formation of vocational interests, the importance of adequate role models in the development and implementation of a self concept, the continuity of the adjustment process, the demands of life stages, the foresight provided by the study of career patterns, the basic assumption that the development of the individual can be facilitated and guided by the provision of opportunities for using aptitudes and developing interests and personality traits, the complex nature of the interaction process, psychosocial factors in job satisfaction and the sociologists insistence upon work as a way of life are basic elements, which, according to Super, have been developed in research literature and which must by synthesised into a comprehensive theory of vocational development.

The ten propositions which form the background of Super's work (108) are:-

"(1) People differ in their abilities, interests and personalities.

(2) They are qualified, by virtue of these characteristics, each for a number of occupations.

(3) Each of these occupations requires a characteristic pattern of abilities, interests and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation.

(4) Vocational preferences and competencies, the situations in which people live and work, and hence their self concepts, change with time and experience (although self concepts are generally fairly stable from late adolescence until late maturity), making choice and adjustment a continuous process.

(5) This process may be summed up in a series of life stages characterised as those of growth, exploration, establishment, maintenance and decline, and these stages may in turn be subdivided into (a) the fantasy, tentative and realistic phases of the exploratory stage, and (b) the trial and stable phases of the establishment stage.[1]

(6) The nature of the career pattern (that is, the occupational level attained and the sequence, frequency and duration of trial and stable jobs) is determined by the individual's parental socio-economic level, mental ability and personality characteristics and by the opportunities to which he is exposed.

(7) Development through the life stages can be guided, partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self concept.

(8) The process of vocational development is essentially that of developing and implementing a self concept; it is a compromise process in which the self concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows.

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[1] The substages of the 1953 statement are modified by 1957 (118).

(9) The process of compromise between individual and social factors, between self concept and reality, is one of role playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work and entry jobs.

(10) Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences had led him to consider congenial and appropriate."

In retrospect, Super's presentation of these propositions as a theory of vocational development "inherent in and emergent from the research philosophy of psychologists and counselors during the past two decades" is puzzling for later (118) he recognises the tentative nature of his work and prefers to formulate working principles in need of further investigation for verification or clarification.[1]

It is difficult to evaluate Super's contribution in unequivocal terms. Firstly, his emphasis upon a developmental approach coming at a time of pre-occupation with static trait prediction models is timely in that it stresses the ongoing, continuous nature of vocational development and the place in that development of successive choices or patterns of choices. Bordin, Nachmann and Segal (11) now think that too much has been made of the choice vs development issue and suggest that they simply represent different research strategies. For Super, however, the developmental orientation permits (1) investigation of preference, entry and adjustment as well as choice (2) development of a prediction model embracing the concept of career, i. e., the sequence of jobs in the life of a person, be the mobility vertical or lateral, the jobs unrelated or related. The failure to develop an appropriate statistical procedure is an unresolved problem in his research programme.

Secondly, his adoption of the self concept as the key to occupational choice associates him with the personality oriented vocational choice theorists who espouse the notion of identity: "Who am I?", "Where do I belong?". The status of the self concept and its measures has been critically examined (27, 67) and Brayfield (16) registers the verdict that the self concept has been the locus of much sloppy work. Even after proposing that the process of vocational development is essentially that of developing and implementing a self concept Super (118) writes of "... the difficulty of testing hypotheses concerning the self concept, even though it seems to lend itself admirably to the formulation of broad principles explanatory of occupational choice and vocational adjustment." 1

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[1] In (118) Super restates his working principles in eleven propositions. These are very similar to the ten propositions and are not reproduced here.

Thirdly, his attempt to integrate differential psychology with personality and developmental psychologies (Samler (98) is perplexed that the guidance and mental hygiene movements should have existed side by side for more than 30 years without a rapprochement having been attempted earlier) and with relevant material from occupational sociology represents a significant contribution. The provision of a framework of possible determinants (Appendix II) representing an interesting and useful catalogue of causal factors contributes little to rigorous hypothesis derivation, as Darley and Hagenah have commented (28). However, in the light of "low grade ore" results from vocational choice theories, such frameworks, whether they be of the type provided by Super or Blau and his associates (8) provide a basis for practitioner usage of such results.

And lastly, the large scale nature of the Career Pattern Study with its vast amount of data and intermittent research reports, creates an impression of discontinuity in dealing with problems. For example, early preoccupation with the self concept gives way in emphasis to vocational maturity (114, 119). There are unresolved issues with the career prediction model and vocational maturity, notably comparability of measures at different age levels (25, 115). Currently, Super seems not so much interested in the self concept and vocational maturity as in establishing criteria for evaluation of behaviour in handling vocational developmental tasks encountered in early working life (116), a task admittedly related to the concept of vocational maturity.

The Concept of Vocational Maturity.

Super (119) reports a large scale study to determine the components and correlates of vocational maturity at a particular educational level in the exploratory life stage. In his view, vocational maturity is related to the developmental approach and may be thought of as the stage reached by an individual in his

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[1] In a later section, some vocational self concept studies are discussed.

vocational development.[1] Since adulthood as a base line for judging maturity is unacceptable because of continued acquisition of new and different kinds of responses through learning, he proposes (118, 119) two approaches using:-

(1) The subject's chronological age to determine his expected life stage and then relating this to the subject's actual life stage based upon his vocational behaviour, i.e.,

$$\text{V.M.} = \frac{\text{actual life stage}}{\text{expected life stage}} \text{ ; and}$$

(2) The subject's vocational behaviour and relating this to the behaviour of others dealing with the same developmental tasks, i.e.,

$$\text{V.M.} = \frac{\text{behaviour of individual in coping with developmental tasks}}{\text{behaviour of others in coping with same developmental tasks}}$$

Both approaches encounter difficulties, a fact which Super recognises (115). The second, which is the one employed in the Middletown study, works reasonably well as long as the subjects are in the one life stage. But, as a person moves into the next life stage, the developmental tasks change and comparisons between different ages in different life stages become impossible. The first approach, while offering the possibility of overcoming this shortcoming, neglects the methods of handling developmental tasks and provides at best a very crude measure of vocational maturity. Both approaches, however, give an indication of the extent to which an individual's repertoire of vocational behaviour has developed "by showing the life stage which he has reached or by showing how he is dealing with developmental tasks in comparison with others dealing with the same tasks" and are, in fact, necessary to the study of vocational development (119). Since Super is concerned with a particular educational level (ninth grade subjects) in a particular life stage (the exploratory), he chooses to study variations in behaviour in dealing with the developmental tasks of that stage.

Clearly, if these approaches are to be effective, two sets of data are necessary: (1) the vocational developmental tasks characteristic of each life stage (2) the behaviours, their variations and frequencies of occurrence, in dealing with the developmental tasks of each life stage. Since a purpose of the Career Pattern Study is to collect such normative data, it is necessary to proceed initially on a priori basis with dimensions and operational statements which seem relevant to the stage of development under investigation. Initially, five dimensions are proposed (118), these being subsequently expanded to six (119).

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[1] This summary is concerned with the nature of vocational maturity, not its correlates. Refer to reference (119) for details of correlates. Super discusses 28 correlates including presumed predictor variables such as intelligence, socio economic status, family relationships; achievement variables such as peer acceptance, school achievement, adolescence independence; and a number of miscellaneous variables such as age, birth order and religious affiliation.

The amended dimensions are:-

(1) Orientation to Vocational Choice. No eventual choice need be made but some thought should be given to eventual life work in terms of intermediate choices such as decisions about high school subjects. Some occupational information is acquired, some use made of community, home and school resources. There are two indices to this dimension -

(a) concern with choice; and

(b) use of resources in orientation.

(2) Information and Planning about the Preferred Occupation. The existence of preferences is assumed, based to some extent upon reality factors and with thought to plans or actual plans for attaining preferred goals. The indices of this dimension are -

(a) specificity of information about the preferred occupations, e.g., requirements, duties, conditions, opportunities.

(b) specificity of planning about the preferred occupation, e.g., steps taken to plan post high school curriculum.

(c) extent of planning activity, e.g., discussion of plans with others, reading of printed materials.

(3) Consistency of Vocational Preferences. Ideally personal attributes, e.g., interests, abilities are considered and this focuses preferences into internally consistent groups. Consistency is indicated by naming (1) only one preference (2) a number of preferences consistent as to field, e.g., engineering and level, i.e., with same ability and education demands or by stability of preference over a period of time. The last mentioned may indicate premature fixation, rigidity or identification with inappropriate role models and is thus a questionable index of maturity. Three indices are proposed -

(a) consistency of vocational preferences within fields;

(b) consistency of vocational preferences within levels; and

(c) consistency of vocational preferences within families (fields and levels).

(4) Crystallization of Traits. Psychological characteristics stabilise in forms which differentiate the individual from his peers. Such vocationally relevant attributes as aptitudes, interests, work values are appropriate here, e.g., degree of interest patterning, work values patterning, awareness of job attributes and acceptance of responsibility are indices of crystallization of vocational traits. The indices of this dimension are -

(a) degree of interest patterning, based upon primary, secondary and reject patterns on the SVIB;

(b) interest maturity, based upon a modification of the interest maturity scale of the SVIB;

(c) liking for work, based upon assessment of interview protocol;

(d) patterning of work values, based upon Super's Work Values Scale;

(e) discussion about rewards of work, based upon assessment of interview protocol; and

(f) acceptance of responsibility for choice and planning.

(5) Vocational Independence. In the original formulation of vocational maturity dimensions, "vocational independence" is subsumed under "crystallization of traits" along with "acceptance of responsibility" and "extent of planning activity" (119). Preliminary statistical analysis suggests relocation as indicated. Vocational independence, at the life stage covered by Super's study, refers to prevocational experience, i.e., chores, part-time and vacation employment. Operationally, it covers vocational activities free from parental supervision. Its indices are -

(a) source of work, i.e., how is the job obtained;

(b) auspices of work, i.e., relationship of employer to individual - family, friend or stranger;

(c) supervision on job, i.e., degree of freedom exercised;

(d) responsibility exercised on the job, i.e., responsibility for materials, etc. and safety of others;

(e) extent of paid employment, e.g., casual, part-time, full-time, vacation.

It is assumed that if supervision is close and work obtained through the family not as much independence, and hence maturity, is evidenced as in the case of a boy who obtains work for himself and works without supervision.

(6) Wisdom of Vocational Preferences. Behaviour assessed in terms of the previous dimensions must be related to the wisdom of the individual's preferences. Wisdom of vocational preferences is a more critical dimension and is available through such indices as -

(a) agreement between ability and preferences;

(b) agreement between measured interests and preferences:

(c) agreement between measured interests and phantasy preferences;

(d) agreement between the occupational level of measured interests and level of preference; and

(e) socio economic accessibility of preference.

The last index assumes that it is wise to aspire to the parental level in that it is accessible in terms of contacts, i.e., the family can assist by helping the young person get oriented and should in terms of socio economic status have the means necessary to provide preparation or initial establishment in the career.

For the purposes of assessing vocational maturity Super provides a framework of indices and components based on the six dimensions (119). Data sources, methods of scoring and reliability statistics are also provided.

The subjects for the vocational maturity study are Middletown Ninth Grade High School students, age range 12 6/12 to 17 11/12 years, average age 14 3/12 years, (see Appendix III) and for the analysis of intercorrelationships between indices and elements, those measures having statistically significant positive relationships constitute vocational maturity in grade nine. On this basis six indices are found to be internally consistent and positively interrelated. They are reproduced below:

Dimension A - Orientation to choice tasks:

	1a	4f	2a	2b	2c	1b
Index 1a: Concern with choice	...	.56	.40	.48	.29	.23
4f: Acceptance of responsibility	.56	...	.47	.57	.51	.24
2a: Specificity of information	.40	.47	...	.37	.29	.17
2b: Specificity of planning	.48	.57	.37	...	.46	.07
2c: Extent of planning	.29	.51	.29	.46	...	.06
Dimension B - Use of resources:						
Index 1b: Use of resources	.23	.24	.17	.07	.06	...

Dimension A seems fairly well established, Dimension B less clearly so and is marginal as a measure of vocational maturity. "Thus vocational maturity in the ninth grade boys studied appears to consist of behavior which might be characterized as preparation for vocational choice, of orientation attitudes and activities. It is behavior in which the subject looks ahead, considers what the future may hold for him, and engages in thinking, planning and actions which may help him meet the future ... According to our data, vocational maturity in the ninth grade does not appear to involve having consistent or realistic vocational preferences, having clearcut interests or work values, or having had independent work experience. It is not, at this stage, characterized by preferences which are consistent with each other or with the realities of the self or of the occupational world, or by an initial achievement of a place for oneself in the working world. Vocational maturity in ninth grade boys is shown, not by where they have arrived vocationally, but by how they are thinking about goals and what they are doing about them." Readiness to explore self and world of work, not readiness to make an occupational choice is the striking characteristic.

In constructing his indices of vocational maturity Super is guided by certain concepts borrowed directly from developmental psychology (1) development proceeds from random, undifferentiated activity to goal-directed, specific activity (2) development is in the

the direction of increasing awareness and orientation to reality and (3) development is from dependence to increasing independence (119). At the same time, he acknowledges a debt to Dysinger (32) and Norton (79, 80) for their contributions to the concept of vocational maturity. Dysinger (32) adopts a developmental point of view, speaks of vocational choice as a process of growth reflecting other phases of development and proposes longitudinal studies of vocational choice which will exhibit the quality of increasing maturity with age. He speaks of vocational development proceeding from play and phantasy preferences through a transitional stage of exploration which is more realistic to a stage of crystallization of preferences in which plans are considered, try outs attempted, alternatives weighed and placement possibilities explored. This is not purely rational, and emotional factors may predominate. It is a period in which prestige considerations either real or imaginary weigh heavily, in which fears and the young person's habits of avoiding responsibility and decision making are influential, although, generally speaking, reality factors are more evident. Norton (79, 80) reports patterns of vocational preferences over a 25 year period as recalled by subjects who are settled in work. His subjects are teachers and factory workers and data is given by sex and type of employment. Women show a different and narrower pattern of preferences; the number of preferences varies at different age points, reaching a peak at about age 16 years, then stabilizing at a smaller number of preferences as the person approaches the stage at which preferences are implemented. Interestingly enough, the number of preferences shows an upward trend again at about age 27 years arising, perhaps, from dissatisfaction with work. Norton also studies the relationship of certain motives, e.g., status, association with people, self expression, etc., and external influences, e.g., family, friends, the education system, work experience, financial limitations, etc., in the development of preferences. Norton is not explicitly concerned with vocational maturity. His approach, however, is developmental and his data showing phantasy content of earlier preferences, e.g., actress, policeman, the narrowing of preferences with increasing age are pertinent to the problem.

Another approach to the assessment of vocational maturity is provided in O'Hara and Tiedeman's study of the vocational self concept in adolescence (82). In this context, maturity is reflected in increasing congruence with age of self and measured assessments of vocationally relevant attributes, e.g., interests, abilities (see also Norrell and Grater - reference (78)).[1] It does not, however, constitute a radical departure from Super's view of the concept which is unquestionably more comprehensive and complex.

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[1] Studies of the realism of vocational choice are relevant to the maturity issue. As an example, see: Stephenson R.M., Realism of vocational choice: a critique and an example. Personnel Guid. J., 1957, 35, 482 - 88.

Before leaving the concept of vocational maturity, it is pertinent to examine whether there have been any revisions of the approach implemented in the Career Pattern Study. Super's orientation, as already stated, is developmental and normative. Beilin (4), a colleague of Super, presents a statement applying developmental principles to vocational theory. Vocational theory may follow a "point-in-time" or "developmental" conception. The former examines choice behaviour in terms of forces at work either within or upon the individual at the time the choice is made; the latter views choice as the result of past history and emerging development and is, therefore, part of a larger developmental scheme. If vocational decision making is developmental, then the vocational decision sequence should conform to developmental principles to the same degree as other aspects of development. Beilin goes on to discuss such principles as continuity; irreversibility, i.e., the same set of conditions can never really exist in two different time samples in a particular progression of events; differentiation of developmental process into patterns, i.e., imposition of an organisational plan upon a set of data; pre-eminence of factors at various points in the life span; differentiation and integration; dependence to independence; egocentric to social behaviour; and so on. Of maturity he says, " ... the outcome of normal development is increasing maturity". Maturity has inter- and intra-personal meanings. At any stage of life some people are mature, others less or more so. Within the one person there are aspects in which he is mature, others less or more so. As a concept it is difficult to define. Take, for example, vocational development where maturity is evident in the choices made and how they are made. At a particular stage in development, reality considerations are expected to predominate. With due allowance for individual variability the appearance of this factor in a person's vocational behaviour may be taken as at least one criterion for maturity of choice. Later he comments (5) that both Super and Tiedeman are now less concerned with maturity, particularly the latter; that maturity implies the idea of unity in which the elements can be added, an assumption which has not been examined and that normativity is scarely appropriate to the study of vocational development as a choice process in which emphasis is placed upon individuality. In his criticism of emphasis on the normative he is echoing Frank's "biological relativity" (37). In Frank's view, concern with the normative, with the search for quantitative similarities or identities has shifted attention from the dynamic processes which produce behaviour in the individual. Some thirteen years later, Beilin enters much the same plea when he argues that understanding of the processes producing behaviour should precede study of the maturity of behaviour (5).

Crites (25), also an earlier colleague of Super, proposes a model for the measurement of vocational maturity. He deplores the linguistic confusion surrounding the concept and reviews its current definitions and techniques of assessment. Assuming that vocational development may be thought of as a continuum divisible into life stages and that common tasks confront individuals within each life stage, these tasks acting as stimulus situations eliciting responses which differentiate between younger and older within the stage, then it should be possible to prepare an assessment instrument which can be scored in such a way that scores correlate positively with age (to be expected if vocational behaviour matures with age) and provide age norms which will reflect degree and rate of vocational development. Following Crites' lead, Hall (47) presents such an instrument. His Vocational Development Inventory comprises 100 items developed rationally to measure behaviours and attitudes believed to change with age. The Inventory is administered to 1525 male and female high school students in grades 10, 11 and 12. One half of the subjects answer items with "true-false" response categories depending on their agreement or disagreement with the item, or whether the item is or is not self indicative. The other half use five point response categories ranging from "strongly agree" to "strongly disagree". Results are presented in two forms: (1) age by sex by response category (2) grade by sex by response category. Few items discriminate between age groups; more items discriminate between grade groups.[1] Twelfth grade students are differentiated from tenth and eleventh grade groups through seeing themselves as being able to make a choice and basing their choices on realistic perceptions of the factors in choice of work. Tenth and eleventh grade groups are not differentiated. A preliminary analysis of 32 items shows that 3/4 of the subjects answer each item in the same direction irrespective of age, grade, sex or response category, a finding which is not in keeping with current statements about vocational development.

Hall reflects on his results and refers to four possibilities:-

(1) the group is too homogeneous to allow statistically significant results;

(2) there are not appreciable differences in vocational behaviour for the ages and grades sampled;

(3) items are just not good enough to discriminate;

(4) subjects all have essentially the same verbal behaviour, i.e., they know the "right" answers but do not behave that way.

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[1] O'Hara and Tiedeman (82) regard grade as a more significant stimulating influence than age in vocational development.

He recognises the need for further research using more heterogeneous groups socio-economically and intellectually as well as wider age and grade ranges. He comments, somewhat pessimistically, " ... in fact, one might legitimately ask whether or not we have any better vocational behaviour theories than before Ginzberg made his now famous criticism. Viewed from one vantage point, what we really have is a very large number of assumptions that seem to make logical sense, but we are sorely lacking in empirical verification." Hall's study is an attempt to examine empirically statements in vocational development literature which have tended to acquire axiomatic status, a tendency deplored by Borow (13, 14) and Crites (26).

Although research investigations of vocational maturity have not been unequivocably successful, the concept will undoubtedly remain attractive to counsellors and educationists. Dysinger's "vocational readiness" (32), Havighurst's "teachable moment" (49), Super's emphasis on the development of a "repertoire of appropriate behaviour" as a prerequisite to coping successfully with developmental tasks (118, 119) attest the importance of the concept. Super's study (119) encounters difficulties, viz., crudity of measure, lack of comparability between life stages and Crites (25) and Hall (47) fail to verify a basic assumption, viz., that vocational behaviour matures in the age range studied. Super (118) is unhappy with the term "maturity" because of less ambiguous meanings acquired in the biological field and suggests elsewhere (115) that one way to handle the measurement problem may be to use developmental tasks which are encountered throughout life but which take different forms with changing life stages, e.g., planfulness.

Personality Oriented Theories of Vocational Choice and Development

Theories of vocational choice have been developed which emphasise economic, sociological and psychological factors or alternatively present an interdisciplinary position (8). Some writers (50) doubt if a valid theory of vocational choice is possible at this stage because the data of psychology, sociology and economics may not lend themselves to the development of a series of constructs that can be united into a theory. In their view, social, individual and economic determinants may be disparate events, operating in their own ways to affect the vocational development of the individual.

Bachrach (1), Hewer (50) and Hilton (51) present useful classifications of vocational choice theories. In the main, this paper as stated in the introduction is concerned with contributions emphasising developmental, e.g., Super and Tiedeman and personality viewpoints though these are not mutually exclusive. Personality theories of vocational choice emphasise structure and its dynamic development as basic determinants and may be further categorised as (1) psychoanalytically oriented, e.g., Bordin and colleagues,

(2) being concerned with self concept and development of identity, e.g., Super, Tiedeman, Tyler (3) stressing inter personal relations and need satisfactions, e.g., Roe.

In this section, the theories of Roe (94), Holland (54, 55, 56) and Bordin (11) are given in some detail. Brief reference is made to studies by Small (103), Crites (24) and Tyler (126). Self concept studies which correctly belong in this section follow the Harvard Studies in Career Development. Some of the research of the latter group particularly the more recent examples, explores the role of the self concept in vocational development. Thus, in the interests of continuity, other self concept research summaries follow those of the Harvard group. Other personality theory oriented research is given in summaries in Part II (e.g., (10), (46), (71), (131)).

Roe's Theory of Vocational Choice. Roe (94) presents a theory of vocational choice based upon concepts of interpersonal relations and need satisfaction. Expressed simply, her theory is based on the close relationship between the individual's developed needs, interests, attitudes, and his choice of occupation and, further, on the relationship between early life experiences and the development of these needs, interests, attitudes. Parents create a particular psychological climate by the manner in which they satisfy or frustrate the early needs of the child, and, as a result, a basic direction of attention is developed either towards persons or non-persons which in turn results in predictable patterns of specific interests in the adult relevant to the field to which he will apply himself. His choice of vocation is one of these.

Whereas Holland (53, 54, 55, 56) uses six personal orientations into which occupations can be grouped, Roe proposes one dimension, viz., orientation towards persons or non-persons. She emphasises early inter-personal experiences in relation to need gratification or frustration and incorporates Maslow's hierarchy of prepotent needs into her theory (93).

Maslow[1] postulates a hierarchy of motives which must be satisfied from lower to higher levels for a person to express his most human attributes. The structure from low to high is:-

(1) physiological needs, e.g., need for food.

(2) safety needs - there are two aspects (a) a reasonably safe world and (b) an orderly, predictable world.

(3) belongingness and love needs, i.e., achieving affectionate, acceptable relationships with people.

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[1] See Maslow A.H. Motivation and personality. New York: Harper, 1954.

(4) esteem needs - there are two subsidiary sets (a) desire for strength, achievement, adequacy, mastery and competence, for confidence in the face of the world, for independence and freedom (b) desire for reputation or prestige, i.e., respect or esteem from other people, status, dominance, recognition, attention, importance or appreciation.

(5) self actualization need - a sense of living what you actually are.

(6) desire to know and understand, i.e., cognitive needs.

(7) aesthetic needs - for beauty and harmony.

In Maslow's view the chief principle of organisation in human motivational life is the arrangement of needs in a hierarchy of less or greater priority or potency. Higher order needs, i.e., need to explore, reach out, find new meanings, create, etc., are less potent than the lower order needs, the gratification of which precedes the emergence of the former. Maslow, while emphasising gratification, does not overlook the roles of voluntary or forced deprivation, renunciation, or suppresion of lower order needs as a precondition for higher order need emergence and recognises that gratification theory has to be structured with other psychological theories, e.g., frustration theory, learning theory, etc. Maslow's theory is inherently attractive to a psychology of work since it corrects undue emphasis on biological and physiological needs in motivation.

Roe (93), having adopted Maslow's theory, does not relate it in detail to the central position of her theory. The essentials of her position in relation to need gratification are given in eight hypotheses (94):-

(1) "The hereditary bases for intelligence, special abilities, interests, attitudes and other personality variables seem usually to be non-specific, i.e., genetic elements probably limit the degree of development rather than directly determine the type of expression.

(2) The pattern of development of special abilities, etc., is primarily determined by the directions in which psychic energy comes to be expended involuntarily, i.e., the things to which the individual gives automatic attention are keys to his behaviour.

(3) These directions are determined in the first place by the patterning of early satisfactions and frustrations.

(4) The eventual pattern of psychic energies, in terms of attention directedness, is the major determinant of the field or fields to which the person will apply himself.

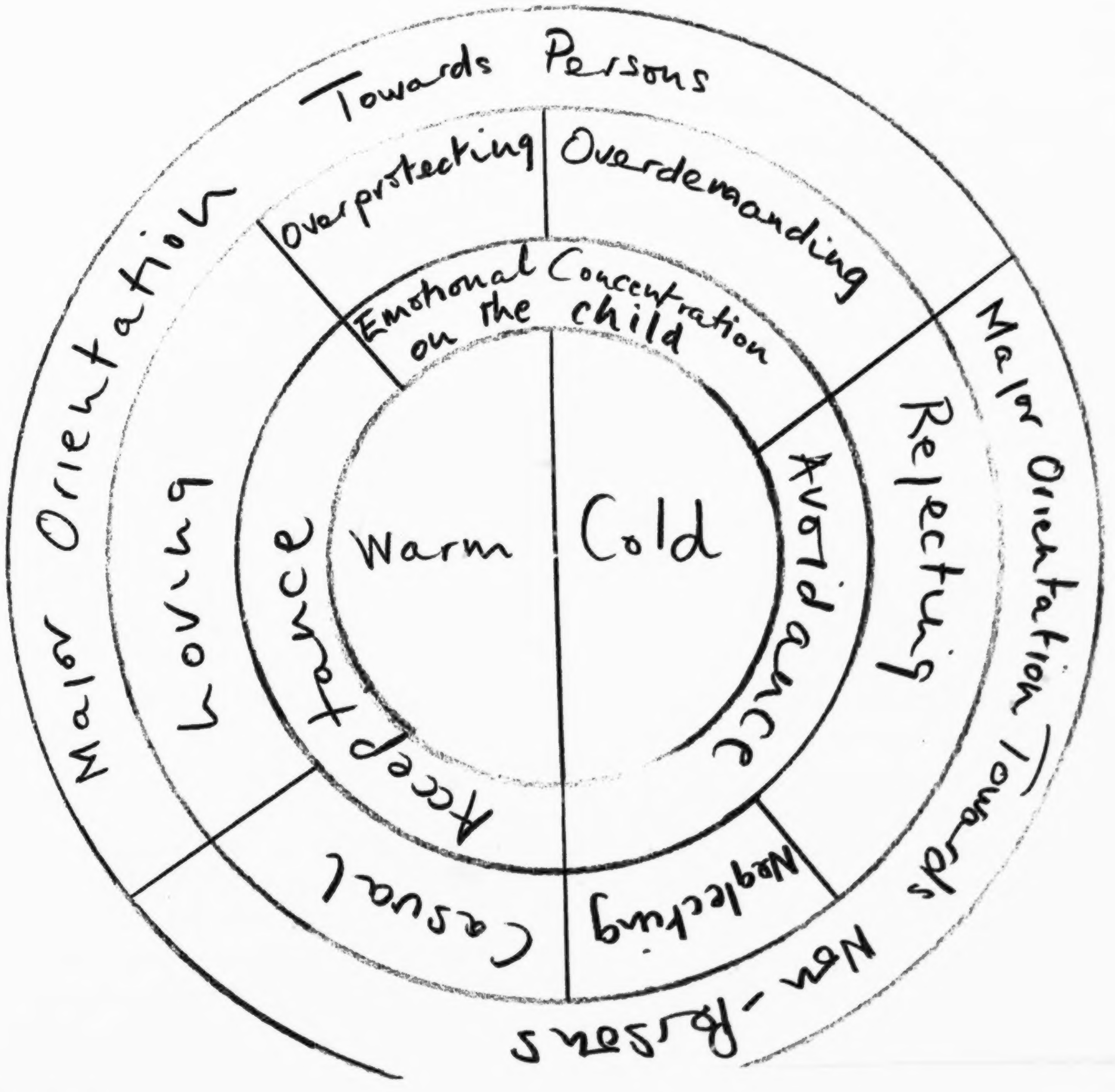
(5) The intensity of these (primarily) unconscious needs, as well as their organization, is the major determinant of the degree of motivation as expressed in accomplishment.

(6) Needs satisfied routinely as they appear do not develop into unconscious motivators, i.e., they are satisfied.

(7) Needs for which even minimum satisfaction is rarely achieved will, if higher order, become in effect expunged, or will, if lower order, prevent the appearance of higher order needs and will become dominant and restricting motivators.

(8) Needs, the satisfaction of which is delayed but eventually accomplished, will become unconscious motivators, depending largely upon the degree of satisfaction felt. This will depend, among other things, upon the strength of the basic need in the given individual, the length of time between arousal and satisfaction, and the values ascribed to the satisfaction of this need in the immediate environment".

Parental handling is fundamental to basic need gratification and Roe (94) proposes a classification of parental atmospheres which result in orientation to persons, or non-persons. These atmospheres and personal orientation are represented diagrammatically:


Major Orientation Towards Persons
Overprotecting
Overdemanding
Emotional Concentration on the child
Loving
Acceptance
Warm
Cold
Avoidance
Rejecting
Major Orientation Towards Non-Persons
Casual
Neglecting

There remains the question of a meaningful classification of occupations relevant to personal orientation. Roe's (92) first scheme proposes a groups by levels classification. The group dimension uses the notion of primary focus of activity which attempts to incorporate meaningful psychological factors of interest and need (see Appendix V for other interest factors). Three main categories are employed: (1) physical (2) personal interaction, i. e., supportive, exploitative, close or distant personal, administrative (3) knowledge, i. e, gathering, transmission, application of knowledge of the world and of the works of man. In more specific terms this results in the following scheme of occupations (1) physical (2) social welfare, personal service, persuasive, business and government/industry (3) mathematics and physical sciences, biological sciences, humanities and the arts. The levels dimension refers to type of function performed and incorporates (1) innovation and independent responsibility (2) transmission (3) application (4) support or maintenance.

Moser et al. (76) working in the context of the Career Pattern Study propose modifications which Roe (93) incorporates in her classification. The Career Pattern Study workers are unwilling to accept a categorization of occupations based upon interests because there is "insufficient evidence for communalities of both interest and personality factors as they are related to occupational groups". Secondly, they consider that level (1), i. e., innovation, is an over refinement of the practical situation and that distinction between levels (2) and (3) in professional and semi-professional groups refers to activities rather than levels. The scheme in its final form presents eight groups and six levels (93):-

(1) Groups

(a) Service: Primarily concerned with serving and attending to the personal tastes, needs, welfare of others, e. g., guidance, social work, domestic and protective services. Personal interaction predominates and the character of the interaction is succorant and nurturant. Workers in this group tend to be high on social and religious values They generally have few intellectual and artistic interests and at the lower levels (Dimension 2) tend to be lower on general intelligence than the average of other groups. At the upper levels, there is usually emphasis on verbal abilities

(b) Business Contact: Primarily concerned with face to face sale of commodities, investments, real estate and services. Includes such occupations as demonstrators, auctioneers, etc. A distinction is made between sales occupation in which personal persuasion predominates and those in which selling is routine. The latter belong to the next group. In this group the relationship is exploitative. Workers in this group score high on dominance, on the persuasion scale of the Kuder and generally lack intellectual and artistic interests.

(c) Organisation: Managerial and white collar jobs in business industry and government. The emphasis is upon organisation and efficient functioning of commercial enterprises and of government activities Workers in this group are generally non artistic and non intellectual. Personal relationships are frequently important and both poles of the dominance-submission relation appear. Economic values are usually important and persuasive scores may be high in the upper levels. Clerical interests are more important in this group than in any of the others.

(d) Technology: Concerned with production, maintenance and transportation of commodities and utilities. Interest in personal interactions is generally low. There are marked intellectual interests in the upper levels. Mechanical aptitudes and interests are of greater significance in this group than in any of the others. Artistic interests and values are low and masculinity ratings high. Workers in this group are object oriented and lack of interest or necessity for personal interaction is not necessarily defensive.

(e) Outdoor: Includes agricultural, fishery, forestry, mining and kindred occupations Is primarily concerned with the cultivation, preservation and gathering of crops, of marine or inland water resources, of mineral resources, of forest products, animal husbandry. Information on persons in this group is scanty

(f) Science: Primarily concerned with scientific theory and its application under specified circumstances, other than technology Intellectual interests and abilities are strong in this group and the patterning of verbal and non verbal interests varies with the field of science. Artistic interests are unimportant. Generally, the orientation is away from persons and there is reason to believe that, with some in this group, this may be defensive A few in this group are interpersonally oriented, e.g., psychologists, and anthropologists, but the nature of this orientation is different from the Service group. Roe suggests that there may be a future need to subdivide this group into physical, biological and social sciences.

(g) General Cultural: Primarily concerned with the preservation and transmission of general cultural heritage. It includes occupations in education, journalism, jurisprudence, the ministry, linguistics, etc. Verbal orientation is high with some interest in interpersonal relationships. Artistic interests are of some importance and intellectual interests are generally strong.

(h) Arts and Entertainment: Primarily concerned with the use of special skills in the creative arts in the field of entertainment. Special artistic and physical abilities are important. Intellectual interests are not very great although in a few verbal ability may be high. A tendency towards the feminine side is apparent as well as a strong narcissistic pattern.

(2) Levels

This refers to the level of functioning and is based upon degrees of responsibility, capacity and skill. Level of responsibility refers to the number and difficulty of the decisions to be made as well as different kinds of problems to be decided. Roe (93) comments that this aspect has not been much considered; yet it is obviously important in terms of the meaning and value of the occupation to the individual.

The same title may occur at different levels, e.g., a business executive, depending on his duties, may appear at level A, B, or C. There are six levels:-

(A) Professional and Managerial 1: Independent Responsibility. Includes innovators and creators, top level managerial and administrative, professional persons with independent responsibility in important respects. For occupations in this level there is generally no higher authority except the social group. Several criteria are suggested:

(a) Important, independent, and varied responsibilities.
(b) Policy making.
(c) Education: when high level education is relevant, it is at doctoral level or equivalent. (This applies to U.S.A.).

(B) Professional and Managerial 2: Difference between 2 and 1 is primarily one of degree. Genuine autonomy may be present but with narrower or less significant responsibilities than in level 1. Suggested criteria are:

(a) Medium level responsibilities, for self and others, both with regard to importance and variety.
(b) Policy interpretation.
(c) Education at or above bachelor level, but below doctorate.

(C) Semi-Professional and Small Business: Criteria suggested are:

(a) Low level responsibility for others.

(b) Application of policy or determination for self only (e.g., managing a small business).

(c) Education, high school plus technical school or equivalent.

(D) Skilled: Follows classical subdivision.

(E) Semi-Skilled: Require some training and experience but less than in D. Little autonomy and initiative.

(F) Unskilled: No special training or education. Ability necessary to follow simple directions and engage in simple repetitive actions.

The two-way classification by group and level generates an 8 x 6 table, i.e., 48 cells for classification of occupations. An example for each cell is given; where a cell is blank, then no occupations have been grouped in these cells - see Appendix IV.

Groups a, b, c, g, and h are relevant to major orientation towards persons and groups d, e, and f to major orientation towards non-persons.

Roe's theory has generated research (43, 45, 120, 129), the results of which fail to support her views. Grigg (43) compares recalled parental attitudes of graduate nurses and scientists (maths-science majors) expecting that the latter group will report colder, less attentive parental treatment. Results do not support this hypothesis although the science group is significantly differentiated in terms of early interest in gadgetry suggesting some support for relation between orientation towards non-persons and science and technology career choice. Hagen (45) uses data from the Harvard Adult Development Study and fails to find significant relationships between judged home atmospheres and career choices classified according to Roe's system. He suggests that sufficient differentiations among careers are not represented in Roe's scheme; that some groups are more homogeneous in their need patterns and opportunities for need satisfaction; that the total home atmosphere needs more critical examination in terms of parent-child interaction and particularly the child's response to the atmosphere rather than the atmosphere itself. Switzer et al. (120) carry the investigation of parental attitudes a step further by considering interaction of maternal and paternal attitudes. Their study uses ministerial major and chemistry major students and graduate theology students, being primarily concerned to test the hypothesis that ministerial students will report parental home atmospheres more overdemanding and less rejecting than chemistry students. Results fail to support Roe's hypothesis, but, interestingly, reveal significant inter parental differences in the overdemanding and rejecting dimensions. Utton (129) takes four occupations, two person oriented, viz., social workers and occupational therapists and two non-person oriented, viz., dietitians and laboratory technicians. There are two aspects to the study (1) comparing the two broad groups on the Social Scale of the AVL (2) comparing the two groups in terms of recalled parental-child relations The person oriented occupation group gives significantly higher AVL scores, a finding that is consistent with Roe's theory but the two groups are not significantly differentiated by the other research variable. Another finding relating to those subjects with interests closely resembling those of their professional colleagues (B or better on SVIB) lends some support to Roe's hypothesis.

While these studies fail to support Roe's theory, they are not themselves without difficulties. Hagen (45), for example, uses data collected for other purposes and relies on interjudge consistency in assessment of probable family atmospheres. The other studies (43, 120, 129) rely on self report of recalled experiences and as such are subject to error through forgetting, distortion over time as well as response bias, e.g., social desirability of responses Grigg (43) checks for influence of social desirability by noting the frequency with which less socially desirable responses are used. He also comments that the questionnaire technique may not be a "sensitive and sufficient test of her hypothesis" and that the questionnaire items may not adequately represent Roe's theorizing.

Roe (95) comments that her theory is very broad and that when specific and very limited deductions are made, care must be exercised that the groups chosen for comparison are sharply discrete. Hagen (45), on the other hand, considers the theory specific and asserts that 100% "hit" rate between family atmosphere and selected career group is expected. Roe (95) deplores Grigg and Utton's use of female subjects because the employment position for women is more complex; male subjects are to be preferred or groups of men and women in extremely sex typed positions. Hagen (45) comments that the rules for occupational classification in Roe's scheme are clear and that misclassification is not a possible explanation of failure to confirm her theory. Yet Roe (95) is able to question Grigg's classification of nurses in the Service group (person oriented), explaining that nurses who return to graduate school show interests more congruent with those of scientists than women in general and that nurses in general show elevation on both scientific and social service scales of the Kuder. Switzer et al. (120) classify ministerial major students in General Cultural rather than Service on the grounds that they are more interested in theology than people, a contention that could be disputed.

Roe's position in the vocational development movement is interesting (currently she is co-director with Tiedeman of the Harvard Center for the Study of Careers). Her interest in the personality of occupational groups predates the movement (88) and her studies of eminent scientists (89, 90, 91) appeared in the early 1950's. Her book, "The Psychology of Occupations", was issued in the same year as she was President elect of the Division of Clinical Psychology of the American Psychological Association, a division from which much of the disapproval of vocational counselling emanated[1]

Holland's Theory of Vocational Choice

Holland (54, 55, 56) presents a theory of vocational choice which analyses occupations in the same framework as personality organisation. In this respect, it is similar to the work of Roe and Bordin. Basically, the theory embraces two strands:-

(1) direction of behaviour, by which is meant that different kinds of people are attracted to different kinds of vocational environments; and

(2) level of vocational choice, which refers to the level within a particular environment to which a person aspires and is assumed to be a function of intelligence plus self evaluation.

The person making a vocational choice in a sense "searches" for those environments which are congruent with his personality pattern and the relative worth he attributes to himself.

To make the theory operationally meaningful Holland provides means of assessing the key concepts, viz., personality profile or to use his term "pattern of personal orientations", vocational environments and self evaluation. Intelligence does not require special discussion in this context. He does not develop what might be meant by searching for environments congruent with personality pattern other than to comment that this formulation is consistent with (1) Super's view of occupational choice as self concept implementation (56) and (2) Darley and Hagenah's view that "occupational choice and occupational interests reflect ... the value system, the needs and motivations of individuals."

"At the time a person chooses a vocation he is the product of his heredity and a variety of environmental forces including peers, parents, and other significant adults, social class, American culture and the physical environment." From this experience he develops a "Hierarchy of orientations" which reflect his favourite or common modes of coping with environmental taks. This "hierarchy of orientations" or "pattern of personal orientations" may be assessed from interest inventories, actual occupation, preferred occupation, preference for college major and the like (56). However, each of these methods has restricted value since each gives only limited information about a person's similarity to six personality types which Holland contends are reflected in American culture. He (54) established these types from a review of vocational interest and choice literature when constructing a vocational preference inventory based on occupational titles.

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[1] Refer to reviews by C.H. Patterson and H. Borow of Roe's book. J. counsel. Psychol., 1957, 4, 255-258. Roe is criticised particularly by Patterson for her neglect of extant literature and failure to integrate Maslow's theory of needs with her own theory.

The six personality types are: Realistic, Intellectual, Social, Conventional, Enterprising and Artistic.[1] "Model orientations" or descriptions are provided for each type (see Appendix VI). While a person's resemblance to the model orientations can be assessed in a number of ways, Holland (56) advocates the use of his Vocational Preference Inventory (54) on the following grounds:-

(1) the VPI and model orientations are developed from the same rationale, i.e., that interests or preferences for certain types of work are expressions of personality.

(2) the VPI scales are relatively homogeneous and reliable, and since they are simply lists of occupational titles, they can be used to classify people, major fields, vocational choices, occupations and even environmental forces; and

(3) classification is much easier than with the Strong or Kuder, simply because it uses occupational titles.

Elsewhere (54, 56) Holland argues that use of occupational titles is preferable to activities and other statements typically employed in certain interest and personality inventories because the former items "arouse interest and circumvent defensive behaviour".

Scales on the VPI are scored by counting the number of preferred occupations in each type. The personal orientations so obtained are then ranked and the scale ranked first is the dominant personal orientation. The difficulties inherent in such a primitive typology have been mentioned by Borow (15) and are acknowledged by Holland (56): " . . . the use of single peaks on the VPI is at best a crude method for classifying people, since it uses only a small portion of the total information in a VPI profile".

In terms of the theory, the person who responds to the VPI in such a way that he is classified as Realistic, the model type being masculine, physically strong, unsociable, aggressive, etc., will be impelled towards an occupation, select a course of training, express a preference for work which is also classified as Realistic. Holland

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[1] In his 1959 article (54) Holland uses: Motoric, Intellectual, Supportive, Conforming, Persuasive and Esthetic.

(54) gives examples of occupations in the various occupational environments. Other environments may also be classified in similar terms. For example, undergraduate insititutions are classified in this way by assuming that (1) decision to major in a given field is an index of personal orientation and (2) the institution's pattern of orientations can be assessed by examining the distribution of its students' major fields (56).

Thus at the point of choice, each person has a set of adjustive orientations, developmentally acquired. These orientations are identified in the same terms as the occupational environments. Each orientation represents a distinctive life style "which is characterised by preferred methods of dealing with daily problems and includes such variables as values and interests, preferences for playing various roles and avoiding others, interpersonal skills and other personal factors".

Level of choice is a function of intelligence plus self-evaluation, where self-evaluation is expressive of socio-economic origin, need for status, education and self-concept. In Holland's view, both intelligence and self-evaluation are defined by available scales, e.g., any one of the large number of available intelligence tests and the Status Scale of VPI, Sims Occupational Status Scale, the OL Scale of SVIB.

Expressed simply, given dominant personal orientation as assessed by the VPI, intelligence as assessed by a suitable test and self evaluation as assessed by one of the scales mentioned, the direction and level of a person's career choice may be predicted. Holland (54, 55) acknowledges that the theory expressed in this way oversimplifies the choice process and points out that direction and level are mediated by a series of personal factors and environmental forces, e.g., pressures from family and peers, evaluations of employers and potential employers, attrition rates in training, limitations imposed by socio-economic resoures and the physical environment.

Although Holland has been criticised as a theoretician (15) and the antecedents of his work in the vast amount of interest research are apparent, his resourcefulness and willingness to undertake experimental probes, to revise and reformulate in the light of evidence as it becomes available, to relate the theory to performance and achievement criteria must be acknowledged. Thus, following his longitudinal study (56) he comments that:-

(1) the original statement of the theory contains ambiguities which do not permit rigorous testing of some of its hypotheses; e.g., model orientations are not fully explicated.

(2) the level of choice hypothesis requires revision since the role of status and intelligence in determining choice and achievement is

obviously more complex than implied by the original linear formulation; and

(3) it seems desirable to find other ways of determining a person's resemblance to one of the six types since current evidence suggests that other data, e. g , background and personal history materials may be more stable and discriminating than the VPI scales.

He sees no reason to abandon his basic types or the concept of profile coding but rather to incorporate patterns of interaction between personal orientations within the person and to develop more subtle coding systems. Furthermore, he seeks to extend his theory beyond vocational choice to a more general theory of behaviour. "Direction of vocational choice" becomes direction or canalization of behaviour and "level of choice", motivation to achieve.

Stripped of non essentials, Holland's theory is unambiguous. Its value for Holland depends not upon empirical truth of its assumption that interests are related to personality but on its usefulness in integrating knowledge and promoting research (56). In developing his inventory and relating its personality types to measures of other internal variables, family background and aspiration, as well as various indices of achievement he has accumulated valuable data for the vocational psychologist. The theory has not emerged unscathed from these explorations, a fact which he readily accepts. He works within the realities of societal demands upon the person and goes a long way towards meeting Brayfield's objection that vocational choice theorists are pre-occupied with "tender-ego" psychology with its emphasis on need fulfillment, self-realisation, clarification of feelings, creative self expression to the exclusion of externally imposed performance criteria (17).

Schutz and Blocher (100) report an empirical investigation relevant to the level of choice aspect of Holland's theory. They seek to determine the relationship between a quantitative measure of self-satisfaction and an index of level of occupational choice, viz., the OL scale of the SVIB. The measure of self satisfaction which reflects the degree of identification with ideal self concept is based upon the discrepancy between self and ideal self descriptions on a specially prepared check list. The correlation between the OL scores and normalized self satisfaction scores is reported as + 0. 34 and is interpreted as providing limited support for portion of Holland's theory.

Psychoanalytically Oriented Theories of Vocational Choice

Psychoanalytically oriented theories of vocational choice predate other personality based theories (84). Recently, however, studies (11, 40, 77, 101) conducted under the supervision of E.S. Bordin explore vocational choices in sharply discrete occupational groups in terms of hypotheses derived from psychoanalytic theory and present an articulated framework for vocational development.[1] In some respects, this work is comparable with the theories of Holland and Roe. For example, all use personality dimensions in which occupations can be organised. Holland uses six dimensions, Roe one and Bordin et al. ten (refer to appropriate sections for dimensions used by Holland Roe; Bordin's dimensions are presented later in this section). Roe and Bordin emphasise developmental experiences in the formation of these dimensions, Bordin in much more detail than Roe, the latter specifying only warmth or coldness of parental attitudes.

Patterson (84) briefly reviews the main features of psychoanalytic theory relevant to vocational choice and provides examples of character types, associated traits and probable satisfying work activities. Personality structure may be delineated by certain basic character types, the latter being related to relative dominance of one of the stages of psychosexual development. Character traits vary with the stage reached, whether the point reached is early or late in the stage and the manner in which basic instincts expressed in the stage are handled Some of the instinctual drive enters into the final organisation of mature sexual life; some becomes sublimated and some leads to the development of character traits which are reaction formations against the expression of the drive. The anal charater type is delineated by traits such as love of orderliness, parsimony often approaching miserliness, obstinacy sometimes developing into defiance, pessimism, conscientiousness, reliability, thoroughness and accuracy, sensitivity to encroachment on one's power or prerogative, these being reaction formations against direct expression of the basic drive. Work satisfaction may be obtained in a variety of activities such as indexing, registering and tabulating The anal character may also take pleasure in activities opposed to cleanliness and orderliness, viz., smearing and similar pleasures which in the world of work are sublimations of the basic drive Work satisfaction, in this instance, may be obtained in activities such as painting and modelling.

The research (40, 77, 101) which precedes the presentation of the articulated framework (11) is distinguished by a number of characteristics:

(1) Thorough descriptions of occupations in terms of work demands,

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[1] Bordin's earlier work places himself, at least, superficially in the self concept group, e.g., "choice of occupation, or indication of interest is a reflection of how the person sees himself, of what kind of a person he feels himself to be". His current position indicates departure from this view.

opportunities for impulse gratification offered by work and personality traits compatible with work demands and impulse gratification opportunities. Job descriptions are based upon (a) what people in the occupations say about themselves (b) what others say about them (c) observations of their work. This approach paves the way for a new conception of job analysis and description couched in psychological terms and consonant with Samler's (98) critique of currently circulated occupational information, which in his view, frequently ignores psychological aspects of work.

(2) As a basis for occupational differentiation, the derivation of hypotheses from job descriptions as above, utilising theoretical concepts such as identification, development of defense mechanisms and sublimation. Psychoanalytic concepts may not be acceptable (see Roe's comments later in this section) but unquestionably this work proceeds within the framework of theory. Criticism (28, 84) has been levelled against failure of vocational choice research to (a) have recourse to theory and (b) present formulations with sufficient specifications to help the counsellor in his work and permit testing of hypotheses.

Segal (101) predicts differences between two occupational groups, viz., accounting and creative writing students in their reactions to a variety of projective tests whereas Galinsky (40) and Nachmann (77) test predictions regarding differences in childhood backgrounds of discrete groups, using taped biographical interviews as source of data. The interview data is coded with regard to the hypotheses of the studies. While not all hypotheses are confirmed, the results justify continuing research on vocational development using psychoanalytic concepts emphasising early formative influences and linking the adoption of occupational roles to personality organisation (11).

Bordin et al. (11) assert that the full test of a theory of vocational development resides in its capacity to account for all the major turnings in the individual's career. Meaningful research may, however, concentrate upon prediction of vocational behaviour at a time in the developmental span when serious commitments are made. After certain maturation points are passed such commitments tend to be persevering and change only in response to radical external pressures, e.g., failure or psychotherapy. Thus, choices and preferences at the point of entry to college or university represent a legitimate area of study. The framework is presented as a first, but not necessarily final and most certainly not a tentative, statement of their views. They admit the existence of unresolved issues, e.g., development of measures for the dimensions of their framework, though here they claim that Segal's (101) contribution is a step in the correct direction.

The main features of their theory are:-

(1) Assumption that -

(a) development is continuous, linking the complex and abstract physical and intellectual tasks of adult work to the earliest infantile activities of satisfying instinctual drives and coping with environmental stimulations;

(b) complex adult activities retain the same instinctual sources of gratification as simple infantile ones; and

(c) the essential pattern of needs is set in the first six years of life while, at the same time, recognizing that changes in their relative strengths and configurations occur throughout the life span. " . . . the seeking out of occupational outlets of increasingly precise appropriateness is the work of the school years, but the needs which will be the driving forces are largely set before that time . . . "

(2) Work is regarded as sublimation in the very broad sense that it involves all activity other than direct gratification rather than "in the narrower sense of pregenital impulses channelled into artistic activities.

(3) Exclusion from consideration of those whose occupational motivation is constrained by external forces: thus the emphasis on genuine commitment in the sense of the person directing his energies into specific activities. Absence of commitment may flow from personal factors, e.g., little capacity for sublimation or deferment of gratification or possibly from work itself, i.e., some occupations may afford limited opportunities for gratification.

(4) Knowledge of occupational information affects choice. Ignorance may limit opportunities for gratification. Motivated ignorance, i.e., the neurotic blocking of knowledge of opportunities is an area of special interest.

(5) The ten dimensions in terms of which both people and occupations may be described are dictated by psychoanalytic considerations. They are not dimensions in a statistical sense and are independent of one another at all points in the developmental span, i.e., each originates with a stated physiological function and at the stage of occupational expression satisfies a specific need. The dimensions are specified in terms of activities. For example the nurturant dimension which has two parts (a) feeding (b) fostering is presented as:-

(a) Concern with care of living things, feeding and promoting growth literally with food and shelter and symbolically with words - this is the occupational expression. It stems from infantile feeding experiences;

(b) Concern with literally and figuratively shielding, comforting, protecting the young or helpless, giving warmth and shelter as first one was warmed and sheltered. Its physical prototype is seen in the burrowing into the mother for warmth, in the tactile and temperature sensitivity of the skin.

The remaining dimensions are (1) oral aggressive (2) manipulation, i.e., people and physical objects (3) sensual (4) anal (5) genital (6) exploratory (7) flowing-quenching (8) exhibiting (9) rhythmic movement. Brief descriptions of the dimensions are given in Appendix VII. Each dimension is accompanied by other characteristics:-

(a) Degree of involvement, by which is meant the "degree of investment which a person has in finding ways of gratifying the impulse or the extent to which an occupation requires this activity". Thus, on the one hand assessment of dimension in the person is necessary; and on the other assessment of the opportunities afforded by the occupation for gratification of the impulses involved in the dimension. Degree of involvement is expressed in a 4 point scale:-

0 - no significant involvement
1 - peripheral importance
2 - secondary importance
3 - primary importance

(b) Instrumental mode, referring to tools, instruments, activities e.g., physical actions, use of words, etc., through which the impulse is expressed.

(c) Objects towards which activity is directed, e.g., animate and inanimate objects, abstractions, e.g., business policy.

(d) Sexual mode referring to whether the activity seems to follow a masculine or feminine model.

(e) Affect, by which is meant that the affective component may be accepted or repressed.

As an example, take the nurturant dimensions for three occupations, viz., accountant, social worker, plumber (11):

Dimension	Occupation degree of involvement	Instrumental mode	Objects	Sexual mode	Affect
Nurturant (a) Feeding	(A 0 (S 3 (P 0	Material and psychological supplies	Needs of clients	F	Reaction formation
(b) Fostering	(A 1	Financial advice and safeguards	Clients' financial affairs	M	Affect experienced
	(S 3	Encouragement	Clients' growth and health	F	Reaction formation Affect experienced
	(P 0				

Points of interest are:-

(1) Every occupation and similarly every person can be described in terms of these dimensions and not in terms of a single dimension. This overcomes, for example, the crudity of Holland's "single peak" derived from the ranking of personal orientations Bordin and his colleagues (11) recognise that there may be difficulties in charting occupations in the space defined by the ten dimensions.

(2) Achievement and satisfaction may be predicted on the basis of agreement between the patterning of dimensions in terms of person and occupation.

(3) Because of theoretical orientation the value of responses to direct questions is suspect. In this respect, the psychoanalytically oriented theory of vocational development differs fundamentally from the phenomenologically oriented theories which rely upon self-report data. Bordin and his colleagues (11) reject such data because of presumed effects of repression and instead concentrate upon indirect signs, e.g., spontaneous utterances, inflections, fantasy materials.

Roe (96) finds Bordin's framework fascinating but not easy to grasp because of its psychoanalytic content much of which she considers untested. For this reason she questions the developmental course proposed for each dimension. She rejects the exclusion of those whose occupational motivation is constrained by external forces arguing that investigation of the compromise between aspiration and expectation in the complex of social, economic and psychological forces is of primary concern to the vocational psychologist. She accepts assumptions about continuity of development and the establishment of need patterns early in life but finds the retention of infantile instinctual sources of gratification incompatible with biological and psychological evidence of developmental and maturational changes.

Other Personality Oriented Theories of Vocational Development

Small (103) and Crites (24) are concerned with ego strength in relation to the expression of vocational preferences. Small's study appeared in 1953, two years after the Ginzberg monograph, and is important because of evidence relevant to the role of fantasy in vocational choice and the process of compromise - two prominent issues in Ginzberg's theory.

Small assumes that people seek satisfaction of their basic needs in every major aspect of their lives; that when a need is consciously felt, it is subject to control and modification by realistic factors The person with a healthy ego is able through ego functions of reality testing, compromising, planning and deferment of gratification, to be in strong contact with reality. Essentially, a healthy ego permits the individual to check his drive for need satisfaction against the facts provided by the environment and his own faculties; to postpone satisfactions for a reasonable purpose and to avoid seeking satisfaction in a situation unlikely to yield it. In short, it is realistic. Fantasy is however, also a component of the ego, both healthy and disturbed. The difference between the two lies in the nature of the individual's action: is action dominated by fantasy or is fantasy tempered by reality? Small's hypothesis is that individuals with different ego strengths will show differences in the use made of reality and fantasy in making their vocational choices. He presents evidence for two groups (1) disturbed group (unhealthy egos) (2) comparison group (healthy egos). His results indicate that the choices of the comparison group are more realistic; that for a first and a second choice the comparison group is more realistic in their first choice than for the second and the reverse for the disturbed group. Small suggests that the comparison group use reality perceptions fully in their first choice allowing fantasy components greater expression in their second choice. He collects data about the fantasy contents of choices which, upon analysis in terms of Murray's needs, indicates that the comparison group exercise their skills and aptitudes in seeking involvement with the environment whereas the disturbed group withdraw from the environment. He observes that those making consistent choices have higher average I. Q. than those making inconsistent choices. i. e., in terms of field and level; that more of the comparison group make consistent choices and the average I Q of the comparison group is higher. He then examines choice consistency in relation to I. Q., subtest scatter and occupational choice reality score. The analysis, though not significant suggests a positive relationship between choice consistency on the one hand and higher I. Q., less subtest scatter and greater realism on the other.

Small's results thus retain compensatory balances of fantasy and realism operating throughout the age range studied (15-19 years) and rebut Ginzberg's view of fantasy dominance in preferences giving way to realistic factors after age 11 years Also, his theoretical assumptions locate the compromise process of choice in ego functions. Ginzberg fails to define the possible nature of compromise.

Crites (24) reports a similar study though his methods are different. He takes as points of departure Ginzberg's and Small's work and proceeds to examine the relationship of ego strength as measured by the MMPI to occupational interest level and interest patterning as measured by the SVIB. His results confirm the hypothesized positive relationship between ego strength and interest patterning but not so for occupational interest level. The presumed relationship between ego strength and occupational interest level is based on the assumed positive relationship between ego strength and achievement need on the one hand and achievement need and level of vocational aspiration on the other, an assumption which Crites admits to be doubtful.

Small's and Crites' studies, though both concerned with ego strength and vocational preferences are not easily compared Small emphasises realism of preferences relating this to healthy ego processes. As a side issue he examines consistency and patterning of preferences. His subjects are maladjusted (psychiatric referrals) better adjusted (routine counselling cases) males the former assumed to represent unhealthy and the latter healthy egos. Interest consistency is based upon entry classifications in the Dictionary of Occupational Titles. Crites' subjects are university students, including an over 21 years age group; ego strength is assessed by the MMPI and interest patterning by the SVIB The positive relationship between ego strength and interest patterning is restricted to the over 21 years group, the relationship being absent in the under 21 years group, a finding which seems, at least superficially, inconsistent with Small's observations that almost twice as many of his comparison group make consistent choices. Nonetheless, both these studies are significant, particularly Small's in that they propose a well established personality variable in explication of the compromise process.

Tyler (125. 126. 127, 128) explores the "core of individuality" through a longitudinal study of the person's occupational and leisure activity preferences and the way in which these preferences are organised. Her method (127) is to present subjects with lists of occupations and activities which are first sorted into three groups: "would not choose", "would choose", "no opinion", the subject being allowed the widest possible basis for discrimination. The second step is to eliminate the "no opinion" group and to break up each of the other groups into sub groups which, for the subject, go together in that there is some common reason for acceptance or rejection of the occupations and activities so grouped. At this point, each person is able to arrange his groups on a continuum extending from "would not choose" on the negative side to "would choose" on the positive side. At the same time, he is asked to indicate which sub groups on the positive side are most important to him. Thus, for each person, Tyler has sub groups of occupations and activities grouped together in terms of some aspect of the subject's personality. Individual differences, quantitative and qualitative, are obtained by observation of behaviour in the choice sitation, i. e., quickness, decisiveness, reported satisfaction and counts of categories used, e. g., positive, negative, undecided. Stability of choice patterns is obtained by repeating the procedure three months later and correlating for each person the extent to which positive or negative choices predominate and the tendency to use broad or narrow classifications. The protocols for each occasion are analysed by Tyler, the identity of the subject being masked out, and the similarity of interpretations on the two occasions for each subject subsequently assessed. In the long run, she is interested in establishing whether choice behaviour of this sort can effectively predict choice criteria in real life situations, e. g., selecting a college major, membership of societies, etc.

For the purpose of this paper, details of Tyler's longitudinal interest development study are relevant in so far as they contribute to her proposals for a workable psychology of individuality (126).[1] Her long experience with the SVIB convinces her of the importance of both "like" and "dislike" responses to interest blanks not so much as representing interests in activities of a c ertain type as showing some general orientation to life, based perhaps on family expectancy. "Dislike" responses are boundary or limit setting; they indicate what the person does not want. "Like" responses, the interest pattern stand for a role the person has accepted and awareness of this permits rejection and acceptance of activities and goals in behaviour.

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[1] For details of the interest study, the reader is referred to Layton W. L. (ed). The Strong Vocational Interest Blank: Research and Uses. Minneapolis, Minn: University of Minnesota Press, 1960. Data relevant to the choice research reported above is contained in reference (127).

While Tyler is principally concerned with identity (125) and individuality (126) her orientation is developmental. At each choice point in the developmental span the person is confronted by an incredibly complex assortment of stimulating conditions and behaviour possibilities. To function he must choose from these possibilities and organise what is chosen. These two concepts, choice and organisation, are crucial defining features of psychological individuality. Developmentally, patterns of choice are acquired that serve to let some things in and keep others out. At any one time a large number of behaviour possibilities are ruled out by external circumstances, by personal inadequacies and by previous commitments. Within these limits, however, movement is possible one way or the other and this constitutes choice. A large part of the choice process is unconscious. That part of which the person is conscious allows the possibility of freedom of choice since it may lead to choices different from those that would be made unconsciously.

Tyler's contribution to vocational developmental research involves a number of considerations: (1) her research into interest development and the relationship of choice patterns at different points in time; (2) her views about a psychology of individuality which have stimulated others in this field, e.g., Field, Kehas and Tiedeman (35) in their more recent work on the vocational self concept acknowledge a debt to her articles on choice (127) and a psychology of individuality (126); and (3) although questioning the contribution of differential psychology to the development of a psychology of individuality (126), she provides for counsellors and guidance workers in the vocational areas a number of suggestions based upon developments in that field, e.g., a modification of the attribute matching model of vocational choice relating aptitudes to outcomes through personal decisions (128). In terms of personality orientation, Tyler is a self concept and identity theorist (1).

The Harvard Studies in Career Development

The Harvard Studies in Career Development are not fully reported through the usual journal articles. The major theoretical statements are issued as mimeographed documents.[1] The studies reviewed in this section appeared in journals and are marked by an asterisk in Appendix VIII. In addition, reports of Cooley (22, 23) and Mierzwa (73) as part of the Harvard Scientific Careers Study are included, although correctly speaking, they are separate from the Harvard Studies. Since the earlier studies are more adequately reported in the journals than later research, it is accepted that this review does not portray more recent and current work of the group.[1] The first study (123) appeared as "Harvard Studies in Curriculum Choice No. 1", subsequent studies being referred to as "Harvard Studies in Career Development".

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[1] Professor J.F. Clark, Head of the School of Applied Psychology, University of New South Wales, supplied a complete list of the Harvard Studies which is reproduced in Appendix VIII.

Pepinsky (86) reports an extract from a personal communication from Tiedeman: "The Harvard Studies in Career Development are, in general, founded upon the theory of Career Development proposed by D.E. Super ... However, the studies make greater use of the structure of the American school system than does Professor Super's theory. In the American school system, the following choices stand before a pupil in the elementary school:-

(a) choice of curriculum in secondary school

(b) choice of a college

(c) choice of a field of concentration in college

(d) choice of a graduate school

(e) choice of an area of concentration in graduate school

(f) choice of an initial job upon leaving the educational structure at any phase

(g) choice among alternative job opportunities available at any point in his career

"Each of these choices is an occupationally oriented choice; implementation of each choice limits the invitations to work which an individual may expect from the environment at a later time.

"Initially, the Harvard Studies in Career Development have attempted to ascertain whether ability patterns distinguish people choosing one option over another at any one of these choice points or not. Extensive statistical developments have had to precede investigations of this kind."

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[1] The Harvard Studies of Career Development, in their original form, terminate about mid 1962, being replaced by the Harvard Center for the Study of Careers under the joint directorship of Tiedeman (the original director) and Roe (35).

This statement, issued in 1956, broadly covers the early studies (31, 38, 123, 124). The results of these studies, while revealing overlap of multivariate test score distributions of various choice groups and thereby suggesting some degree of relationship between psychological test scores and choices of students, fail to utilise the subject's percepts of self, an omission which Tiedman considers accounts for the incomplete and tentative character of his results (13). Thus, from these early studies of choice and test scores, the Harvard group turn to the phenomenal self concept in vocational terms. Early endeavours in this direction (82) study the relationship between self and test assessments of vocationally relevant attributes whereas more recent work (35) tackles the problem posed by Tyler (126) of determining for the individual how central, basic and unalterable is any given choice pattern and, additionally, questions the value of traditional Q sorts as logically reflecting all the contingencies needed for adequate understanding of the premises of a person's self system.

Career Development Studies Nos. 1, 2, 4, 5 and 13 (see Appendix VIII) do not display psychological sophistication. Rather they demonstrate the application of the discriminant function to psychological and guidance problems in the Parsonian tradition of the guidance process (121). Tiedeman's interest in discriminant analysis appears to stem from previous research with the Airman Classification Battery (121). Basically, the problem is one of assigning an object to one of a number of mutually exclusive groups on the basis of a set of measurements on the object. The customary procedure is multiple regression analysis. "Let us suppose that ... a large group of pupils was tested on each of these instruments as they left school . After the pupils left high school they followed their own inclinations in the pursuit of earning a living. Suppose that ten years after these pupils had left high school ... we found out what job each was working at, how well he liked the job, and whether he planned to continue it or not. Suppose that in this way we were able to choose a fairly large group of people working in a number of vocations who liked working there, and at the moment, declared their intention of staying there. We would now have a criterion. The problem then becomes one of going back and examining the set of measurements on each individual in each group to determine whether the groups were distinguished by these measurements or not". This problem may be answered by discriminant analysis.[1]

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[1] For details of this technique refer to (121). Also see Cooley W. W. and Lohnes P. R. *Multivariate procedures for the behavioral sciences*, New York: Wiley, 1962.

This statement by Tiedeman (121) provides the rationale of the studies mentioned. In each case, measures on psychological tests and other relevant variables are available for a number of subjects. Subsequently, the subjects unassisted by the test data choose occupations or college fields of concentration and attain some degree of success and/or satisfaction in their chosen field. The question is, then, whether membership of these fields could have been predicted from the original set of measurements and with what degree of success. For the study, subjects are divided into two groups: experimental and check sample. Discriminants and centour scores are calculated for the experimental group and applied to prediction of choices in the check sample group, the predicted choices being then compared with actual known choices and the results expressed as "hit" rates. The centour score is the development of Tiedeman and his students (66). It indicates the percentage of errors likely to be made from rejection of the hypothesis that a subject is a member of a particular group. Thus, if a particular discriminant score yields a centour score of 80 for Group A and 20 for Group B the counsellor will be in error 80% of the time if he says that clients with the stated discriminant score will not enter Group A and 20% of the time for Group B. In this situation, the counsellor is likely to advise the client that his abilities, interests, etc., are more like those choosing Group A.

Dressel (30) raises a number of points about this approach. He questions restriction of investigation to those who "go the distance" and asks whether it is necessarily sound counselling to channel to a field individuals like those already in it. Tyler (128) also discusses this issue in relation to interest measurement. Dressel does not consider that discriminant analysis will replace regression analysis as Dunn (31) suggests since the two techniques answer different questions, the former: "how can I analyse the data so that I may determine the group which an individual is most like?" and the latter: "how can I analyse the data so that I may determine the group in which an individual will perform the best?". He adds the further comment that any statement to an individual about a field appropriate for him will become true or false on the basis of that person's experience of success in that field.

Dunn (31) uses data from subjects completing first degrees in fourteen fields. The actual choices of the check sample are compared with predicted choices obtained in two ways (1) by the results of discriminant analysis (2) by the results of regression analyses assuming that predicted choices will be in those fields with highest grade predictions. Discriminant analysis results in more correct placements. French (38) takes follow-up data from the Harvard Adult Development Study which is analysed for occupational group differences by (1) analysis of variances, i.e., each variable considered separately (2) discriminant analysis, i.e. all variables taken as a profile. He finds considerable overlapping of occupational groups on the measures singly, i.e., analysis of variance and the proximity of individual discriminant scores to centroids of more than one occupational group, i.e., discriminant analysis. He concludes that occupational prediction is no easy matter. Tiedeman and Sternberg's paper (123) presents the first application by the Harvard group of the discriminant analysis to a guidance problem. Using data from high school pupils in relation to their tenth grade curriculum choices they show that, if students choose the curriculum in which they obtain the highest grade average, the use of regression analysis confuses rather than clarifies the prediction of curriculum choice, depending upon whether the mark scales for the curriculum groups are assumed to be comparable or are transformed to standard scores. Discriminant analysis does a "pretty fair" job of differentiating the curriculum groups. Tiedeman and Bryan (124) follow the same method with a group of subjects whose sophomore year specialisations are known. Their predictor variables are the scales of the Kuder. The purpose of the study is to demonstrate the technique of discriminant analysis ... "the data of this paper are by no means ready for clinical use". Cass and Tiedeman (21) repeat a study similar to (123) in which a greater range of test and biographical variables is used. The authors' comment that, at the time of planning the study, they did not fully appreciate the significance of Super's vocational development theory, signifies a change in emphasis in the Harvard Studies from matching man and his choices to understanding the decision process and its dynamics. Borow (12) comments on the difficulty of meaningful interpretation when significant relationships are found between variables, not chosen within some theoretical framework, and some subsequent performance such as choice of an occupation. This remark applies particularly to French's study.

Before summarising some of Harvard self concept and decision studies, brief reference is made to the work of Cooley (22, 23) and Mierzwa (73) in the Harvard Scientific Careers Study.

Cooley (22) provides a comprehensive framework, based upon the pattern of American school organisation, into which the results of previous research into the attributes of scientists are integrated. His orientation is developmental and he sees promise in new directions made possible by more penetrating statistical techniques, viz., regression, discriminant and factor analyses. Previous research concentrates upon comparisons of science versus non science oriented groups at school, college and in employment. From traits found to significantly differentiate the two groups a composite picture of the scientist is drawn. Such a picture is misleading since some of the subjects force the group mean away from the population mean and these deviates are not necessarily the same ones for each characteristic. Such composites do not say which characteristics are important nor do they give any indication of antecedent conditions. What is needed initially is a re-evaluation and synthesis of previous studies. External variables, e.g., religion, socio-economic status, ethnic background, geographical position, sex, race, social structure and home climate result in attribute variables, e.g., ability structure, achievement motivation, self concept, value systems, orientation towards people or things, interest patterns, etc. External selection factors, e.g., economic conditions, college admission policies, availability of scholarships, discrimination practices affect the occupational preference emergent from attribute variables. The resultant occupational goal is a compromise between what one hopes to be and what one might expect to become. Cooley's framework for organizing previous research uses five stages of the American school system: (1) pre-school (2) elementary school (3) junior high school (4) senior high school (5) college, which he considers represent five stages of scientific career development. For each stage data is presented under five headings: (1) general relationships, i.e., major principles or hypotheses having some theoretical or experimental basis but requiring further exploration (2) external factors, i.e., types of experiences and environments tending to produce attributes which are characteristic of potential scientists (3) attributes affected, i.e., those attributes resulting from the specified environments and experiences (4) selection factors, i.e., those forces tending to influence the compromise process (5) potential scientist pool, i.e., provide a statement as to who the potential scientists are at each particular stage. As an example, take Stage 4, the Senior High School Stage:-

General Relationships

(1) The direct activating factor is most important at this stage. The potential scientist has contact with people versed in science who stimulate activity in the area.

(2) The stereotypes of what the scientist is and does, as held by high school students, are important at this stage.

External Factors		Attributes Affected
Opportunity to take high school mathematics.	:	Highly developed mathematical ability.
Early opportunity to do individual "research" in science.	:	Questing attitude.

Other "applause abilities" insufficient to gain wide recognition and distract from academic interests.	Desire for and ability to obtain high scholastic achievement.
Opportunity to take high school science - science hobbies.	Development of specific skills and concepts in the sciences.
Environmental factors from which college attendance predicted, e.g., financial resources, paternal occupation.	Plans to attend college.
Guidance information concerning nature of work, training required for various scientific careers.	Continually developing concept of what scientific career involves. Concept of self as potential scientist. Late psychsexual development. Physical characteristics which enable the person to undertake the necessary manipulative tasks involved in a particular science.

Selection Factors - i.e., affecting the compromise process.

(1) admission to a college which trains scientists

(2) abilities sufficient to obtain a scholarship, if low family income

Potential Scientist Pool

(1) those with ability scores indicative of survival in a college science programme (regression analysis)

(2) those with attributes like others going to science (discriminant analysis)

(3) those with opportunity and intention of going to college and majoring in science

Similar schemes are presented for other stages together with references to other research supporting the summary statements.

Cooley (23) reports results of a section of the Harvard Scientific Careers Study. He is concerned with the accuracy of predicting choice to enter a career in basic scientific research. His method is basically the same as that used in the curriculum choice studies already reported. Personality measures are the predictors. College senior data is used to establish discriminants which are employed to predict decision to enter research in a sophomore group. Such predictions are compared with known decisions and hit rates calculated. Cooley concludes that the research vs. non-research group differences are sufficiently stable to allow correct predictions 75% of the time Mierzwa (73), working within the context of the same study, investigates multi determinants and career choice classified as science vs. non science in a group of eleventh grade high school subjects. The purpose of the study is to determine whether career choice is a function of any one system of data to a greater degree than another The systems of data used are: (1) ability (2) interests (3) temperament (4) personality (5) assessments of the environment by interview and questionnaires. Career choice is based upon stated career goal. Support for using stated career goal as a basis for assignment to science vs. non-science groups is presented by (1) stability of choices between eleventh and thirteenth grades (2) selection of relevant high school subjects. The study uses discriminant analysis from which a hierarchy of systems is established. the order being (1) interests (2) environment (3) ability (4) temperament.

The Harvard Scientific Careers Study employs an unusual longitudinal research design. The Study is concerned with a sixteen year period extending from grade five through college senior to graduation. A five year overlapping design is used.

Self Concept and Vocational Development

Super's statement (114) that "in choosing an occupation one is in effect, choosing a means of implementing a self concept" has stimulated considerable research Brayfield (16) comments that the self concept is the locus for much poor research but sees promise of more valuable work following critical assessments of self concept research (27. 67. 107. 133).[1]

This section begins with a summary of certain Harvard studies using the self concept (35, 61, 82) and then proceeds to a number of independent studies which, in the main, are concerned with testing Super's hypothesis.

As indicated, the Harvard Studies in Career Development are originally concerned with a method of predicting group membership using discriminant analysis. Dissatisfaction with results is attributed to failure to utilise the subject's perceptions of self (13). Thus, later studies turn to theories of self and identity in relation to career and detailed investigation of the decision process.

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[1] Although not concerned with vocational self concept research, the reader is referred to Wylie, R. The self concept: a critical survey of pertinent research literature. Lincoln: University of Nebraska Press, 1961. Wylie has been criticised by the Harvard group (35) for being "intentionally atheoretical". Wylie's book is concerned with design and measurement problems in self concept research.

Tiedeman (122) provides a paradigm of the decision process. He regards each of several decisions about school, work and life as appropriate units for the analysis of vocational development. Vocational development occurs within the context of overlapping decisions and the stage of a particular decision, e.g., entry to college representing a post decision inductive phase may also be regarded as an exploratory pre-crystallization stage of the decision to subsequently specialize in a particular field. Tiedeman analyses each decision in two periods: (1) anticipation (2) implementation. Anticipation is subdivided into exploration, crystallization, choice and specification and implementation into induction, transition and maintenance. With exploration, the intended image is that of an open mind considering various alternatives. It is a period in which the person takes a measure of himself in relation to each alternative. Crystallization refers to the ordering of relevant considerations for each alternative. It is not irreversible. Tentative crystallizations may give way to new explorations, followed by recrystallizations. As stability occurs, choice is imminent and the person is oriented to a particular course of action. The "power" of this orientation depends upon varying degrees of rationality and emotionality in relation to the decision. Prior to implementation, the person has opportunity to further specify his position, to eliminate doubts. Such specification creates a potential directing behaviour. Otherwise doubt reappears and return to a more primitive stage follows. With induction, perceptions of self and environment in relation to goal are brought into contact with society's related but not identical goal and field. The primary orientation is receptive and further specification of individual goal and field occurs. After experience in the situation a new phase, viz., transition begins in which the primary orientation is assertive and the individual "acts" upon society's field and goal modifying them to his needs (this does not necessarily occur). The maintenance stage follows in which the individual and society maintain the resultant organization. It is a period of dynamic equilibruim easily disturbed by factors such as lack of success, quickening of individual strivings and so on. These disturbances, either sought by the individual or forced upon him, contribute either to vocational development or disintegration.

Tiedeman (122) presents a diagrammatic representation of the paradigm. It is tentative, but he believes it to have important correspondence with the available data of vocational development. Though not explicitly stated, Tiedeman implies that the dynamics of choice are to be explored through the phenomenal self concept. Bordin et al. (11) find Tiedeman's approach almost entirley devoid of emotional and motivational influences.

Kibrick and Tiedeman (61) report a study concerned with perseveration of decisions directing vocational behaviour once such decisions have been taken. The study is located in the induction phase of the implementation stage and uses self report data designed to portray degree of correspondence between student nurse and supervisor images of the attributes of the nurse. Its rationale is that a high degree of congruence will lead to perseveration in training and, conversely, disagreement to withdrawal. The results offer very limited support to the authors' theory. O'Hara and Tiedeman (82) explore the vocational self concept in traditional terms, i.e., relating subjects' self report responses to measures of vocationally relevant attributes. The greater the degree of agreement between such self and inventoried assessments, the greater the degree of insight and maturity, i.e., the person sees himself as he is. Such realistic perceptions are presumably related to performance criteria (see Kibrick and Tiedeman's study). Specifically, the study examines two hypotheses:-

(1) self concepts in the areas (i) aptitude (ii) interests (iii) social class (iv) values (v) work values are clarified as boys pass through grades nine to twelve - clarified means become more realistic in the sense discussed; and

(2) there are stages in the development of occupational choice in the same period - this is a test of Ginzberg's hypothesis. The results support the hypothesis of increasing clarification of self concepts with grade except for social class and suggest a discrete and dominant interest stage and work value stage the latter undergoing a secondary phase at grade twelve.

Evidence of dissatisfaction with former self concept research as well as a new approach to the self concept is presented by Field, Kehas and Tiedeman (35). Their purpose, initially to consolidate self concept research in vocational development, becomes rather one of differentiating a new approach from previous work. Concern with maturity and insight gives way to conceptions of self, all of them susceptible to situation. Situation shapes conceptions of self and these concepts affect aspiration. Self statements of conventional self report documents may reflect other than motivational components and may in fact be neutral in motivation of behaviour. Their view of man as a person reflecting on himself as he experiences and then framing judgments about that experience shifts emphasis from the self concept to process of self conceptualizing. They provide a new definition of self concept as "systematizing of self emerging from an experiencing of self as process". Thus their approach is still to regard self as the individual is known to himself. In operational terms, they doubt the value of self reports, Q sorts and adjectival check lists as leading to an understanding of the nature of choices and suggest that future research concentrate upon ways in which the person arrives at "conceptions of self in situation", i. e., by his experiencing style. The research format of this new approach is not specified.

The remaining self concept studies are organized into: (1) vocational choice as a means of implementing self concept (33, 34, 75, 104) (2) traditional insight studies (78) - see also (82) already mentioned (3) studies relating perception of self to perceptions of jobs and occupational roles (9, 18, 132). These studies by no means exhaust research reported in the field of the vocational self concept. Division of the studies into these three groupings is more a matter of convenience than indicative of discreteness in subject or method.

Englander (33, 34) argues that selecting an occupation is not just a matter of attribute matching. Rather it is a process dependent upon congruency between the self concept and perception of the role afforded by a preferred occupation. The individual seeks positions which verify, preserve or fortify his self concept. While Englander's study is derived from Super's statement, he goes a step further in his proposition "preserve or fortify" which implies maintenance and possibly enhancement of the self concept resulting from choice of an occupation congruent with that concept. Thus, his hypotheses centre on (1) perception of personal characteristics in relation to self and preferred occupation (2) perception of features of preferred occupation and features desired for self in an occupation (3) perception of attitudes of significant others towards preferred occupation. His subjects have already chosen careers, in this case in terms of an intermediate criterion of college major. Three groups are used (1) elementary teaching (2) other education majors (3) non-education majors. Elementary teaching is the preference investigated. His results provide limited support for the stated hypotheses. Brayfield (16) comments that a more parsimonious interpretation is that elementary teachers are simply justifying a commitment already made and that, in fact, the results are ambiguous. Interesting features are:-

(1) analysis of elementary teaching beforehand to determine personal dimensions to be tapped through self report documents; and

(2) assumption that perceived personal characteristics be given equal weight in the choice process.

The first point, viz., suitable job analysis before conducting research, is emphasised by the Michigan group (11) though frequently neglected in other research. Rejection of the second point is a current concern of Tyler (126) and the Harvard group (35).

Morrison (75) reports a study relating to nursing which, in broad outlines, is similar to that of Englander. Both (1) derive their hypotheses from Super and his self concept implementation statement, (2) use self report data, (3) use subjects already committed to some degree by actions already taken. Morrison, however, is interested in an additional feature, viz., self-occupation concordance and length of interest in and degree of commitment to preferred occupation. His subjects are nurses and trainee teachers who perform Q sorts, using the same statements, for self, own preferred occupation and other than own occupation. Control of possible perseveration effects is attempted by reversing the order of statements for half the subjects on the second Q sort. For both groups the hypothesis of congruence of self and own occupation is supported. Length of interest in the occupation is not related to self-own occupation congruence but degree of commitment is. Perseveration effects, i. e., in the regular order group, increase the congruence of self and other occupation perceptions and, as such, do not invalidate the results. As with Englander, the results of this study are ambiguous.

Stephenson (104) concludes that perseveration in a similar or related field by medical school rejects provides evidence of the role of the self concept in vocational decisions. His subjects are premedical college students who are not admitted to medical school. The rejected students are subsequently surveyed for details of present status. The data suggests that students who make a strong commitment to medicine, i. e., by completing premedical studies qualify as doctors elsewhere or perseverate in a logically related or compromise occupation. Kehas (60) criticises this study on the grounds that there is no self concept measure. He further comments that Super's notion is both complex, ambiguous and difficult to translate into operational terms. Actually perseveration data of this type does no more than point to the possible role of the self concept.

Blocher and Shutz (9) argue that vocational preferences are a function of degree of acceptance of stereotypes of occupations as self-descriptive or self-enhancing. Acceptance is assessed by similarity of self and ideal self-descriptions with descriptions of others, viz., a typical member of specified occupations. Presumably, on the basis of similarity so described specific vocational preferences are predictable. The authors collect data from their subjects on two occasions. Firstly, they obtain self and ideal self descriptions using a 180 item check list as well as the most and least interesting occupation from a list of 45 occupations. On the second occasion, the same check list is used and subjects describe a typical member of the two occupations previously indicated. On the basis of congruence between self and low interest stereotype descriptions and similarly for ideal self and high and low interest stereotype descriptions, the authors claim support for their theory. Brayfield (16) quotes this study as exemplifying a non-sequitur conclusion. Apart from failure to assess variables independently (a common failure in this research) no prediction of preferences is attempted. Warren (132) provides independent assessments of self concept and expected occupational role, i. e., independent in the sense that different instruments are used. His hypothesis is that discrepancies in self-role conjunctions will result in change of college field of specialisation, a hypothesis which is not supported by the data.

Brophy (18) is concerned with satisfaction, i. e., the sense of well being in one's own subjective experience rather than in terms of need gratification or fulfillment of personal aims. In phenomenological terms, satisfaction is determined by the degree of congruence between self concept and perceived characteristics of the environment. In the world of work, the individual occupies a position in which certain behaviour is expected. This is the external, the "true" character of the environment including societal role expectations. Brophy accepts the possibility, in internal latent terms, of subliminally perceived qualities of the environment but, for his purpose, concentrates on the consciously perceived qualities, particularly the "perceived imposed role", i. e., behaviour perceived as required and/or allowed in his occupancy of a position. Self concept is assessed in the usual way using qualities by which the environmental variable is also defined. Measures of satisfaction are subjective evaluations of general and vocational satisfaction and constitute the dependent variable in this study. Degree of satisfaction is predictable from conjunctions of personal constructs and environmental roles described in phenomenological terms. Thus, if a subject perceives "ideal occupational role" in terms congruent with "perceived imposed role", i. e., the discrepancy is small, then a high degree of vocational satisfaction is predicted. A set of ten predictions based on various relevant conjunctions of the personal and environmental variables is made. Results offer limited support for the theory.

Norrell and Grater (78) investigate degree of self awareness as a function of need structure. They argue that vocational preference is a significant reflection of how the individual perceives himself. This vocational self concept may not be accurate. A possible inaccuracy is distortion in self awareness resulting from need structure. The discrepancy between self predicted and measured interests on the SVIB is taken as an index of self awareness. Subjects predicting more than half their interests accurately are classified as "high awareness" and those less than half their interests accurately "low awareness". Then, on the basis of inter-judge agreement (5 out of 6 judges agreeing), twelve scales are selected from the EPPS on which the direction of scores, i. e., high or low, is predicted for the high awareness group. All differences are in the predicted direction, three scales, viz., order, succorance and change being significant. The authors comment that these needs are classically associated with inability to use one's resources, that adjustment solutions are sought in dependency relationships, in seeking certainty and inflexibility in the environment. They conclude that the study lends support to Super's hypothesis and that if the self concept is distorted inappropriate vocational preferences result.

In view of the central position ascribed to the self concept in much of the research, e.g., Super, the Harvard Studies, Tyler, other studies summarised in this section, and, to a lesser extent, Holland ". . . the person . . . in a sense 'searches' for those environments which are congruent with his personal orientations", it is appropriate to consider the current research status of this concept. Brayfield (16), as already mentioned, sees the self concept as a locus for "sloppy" work. For example, he regards Blocher and Shutz's study as an example of a "non sequitur conclusion", Warren as proceeding from "unsound assumptions" and Brophy difficult to interpret. Yet the concept is viable; it is basic to vocational development theory. Tiedeman (13) sees in it an explanation for the incomplete and tentative character of his early work with curriculum choice and, more recently, the Harvard research workers (35) reaffirm its theoretical status in their work. Super (114) emphasises the central position of the concept but questions its merit because of difficulties in making it operational. Brayfield (16) sees promise of better work following attempts to assess problems in self concept research, e.g., Wrenn's (134) review of current status of the concept; Strong and Feder's (107) organization of existing self concept instruments into a meaningful framework; Wylie's review of self concept research design; and Crowne and Stephen's (27) statement of unresolved problems in the phenomenological theorist's investigation of self acceptance. Lowe (67) questions whether the self is a fit field for psychological research.

The self concept research reviewed in this paper is concerned with the self as an object of knowledge, the self as the individual is known to himself. It is of interest to the vocational psychologist because of possible significance in understanding the compromise process of choice as well as vocational adjustment (114). Reported research utilises self report data and does not in the main question the possible lack of correspondence between such data and the self concept. Self report, e.g., in Q sorts, check lists of various sorts represents a description of self as the person reports it to the outsider. It is what the person says he is which, in fact could be different from what the person believes he is, his totality of ways of seeing himself - the phenomenological theorist's view of the self concept. Self report responses are affected by the self concept but other factors are also operative, e.g., response habits, non phenomenal processes, person's selection of what he is prepared to reveal about himself, etc. Though concerned with conscious perceptions, cognitions and feelings, the research does not tackle the phenomenal vs. non phenomenal issue. Various writers (35, 75, 78, 126) recognise the problem.[1] Other writers (16, 17, 99) question emphasis in current vocational psychology upon egocentric and subjective states in terms of various self regard measures and prefer greater recognition of external performance criteria. It is wrong, however, to imply that vocational self concept research neglects performance criteria. For example, consider current work of Super (116) on criteria for evaluation of early career behaviour and Kibrick and Tiedeman (61) on congruence of self and role perceptions and withdrawal from nursing training.

Vocational Choice and Decision Making

This report summarises certain research in the field of vocational development drawn, in the main, from Super and Tiedeman, their colleagues and others influenced by their theoretical orientation. There are exceptions, e.g., the Michigan group and Roe, both of whom reflect different theoretical positions. Roe is included principally because she is now a member of the Harvard group. Bordin and his colleagues take up certain issues presented by Super and Tiedeman and present an alternative point of view. Thus, unity in terms of the purpose and scope of the report is preserved.

There are, of course, other strands of research relevant to vocational choice but not included in this report:-

(1) The "new look" trait and factor approach which retains the classical approach of trait theory. It points to refinements in procedures which permit assessments of variables relevant to understanding vocational choice (1). Tyler (128), an exponent of self concept and identity theory, directs attention to promising developments in trait psychology and suggests that aptitudes be related to vocational outcomes through decisions. Brayfield (16) reminds us of the considerable literature on vocational interests, " . . . the original self concept . . . unspoiled by anemic theorizing and clarified by more than 40 years of empirical research" and refers to Darley's comment that measured interests reflect in the vocabulary of the world of work the personality of the individual.

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[1] For discussion of these points see Wylie: ibid Chapter III: also Combs A.W., Super D.W. and Courson C.C. The measurement of self concept and self report. Educ. psychol. Meas., 1963, 23, 493-500.

(2) Social systems theories emphasising the interaction of the individual and social groups (1). Hadley and Levy (44) review the role of reference groups in vocational development. They highlight the functions of groups (a) as normative, i.e., setting and enforcing standards (b) as comparative, i.e., individuals use the group as a comparison point for self-evaluation, and (c) in vocational aspiration, in the sense that groups are focal points to which men aspire. They provide a descriptive account of effects of interaction between person and groups over a formative period in the vocational development continuum. Lipsett (65) summarises social factors affecting vocational development, particularly the limiting effects on vocational aspiration of social class identification. He lists social factors relevant to vocational counselling (a) social class membership, e.g., class; education, occupation and income of parents; place and type of residence; ethnic background (b) home influences, e.g., goals of parents; place among siblings; influence of siblings; counsellee's role in the family; family values and counsellee's acceptance of them (c) school influences, e.g., scholastic achievement; relationships with peers; group goals and values at school; any vocational specialisation (d) community influences, e.g. group goals and values; emphases in community activities; special career opportunities or influences; counsellee's identification with community and his desire to remain and accept its values (e) pressure groups, e.g., exposure to influences leading to vocational preferences consistent or inconsistent with counsellee's needs, values, interests, abilities (f) role perception, e.g., does counsellee want to be a leader, follower, isolate - is self perception in accord with perception of counsellee by significant others?

(3) Research relating to issues such as work value dimensions (81) occupational stereotypes and perception of job dimensions (42, 130).

More recently, the relationship of vocational choice to decision making treated descriptively and possible applications of concepts from decision theory are mentioned (16, 39, 134). Since this approach is probably less well known than other strands intentionally omitted from this report, brief reference is made to examples of this work.

Few, if any, vocational psychologists seem to deny that vocational preferences, particularly if acted upon, are decisions, e.g., Tiedeman (122) outlines a paradigm of the decision process in vocational development. Less agreement will be evident, however, if any attempt is made to equate vocational decisions to those encountered in articulated problem solving situations in which the individual choses between (a) and (b), both possessing specified qualities relevant to the choice to be made. Similarly, while concepts of decision theory, e.g., choice under conditions of uncertainty or risk, utility, subjective probability seem superficially applicable to occupational choice, again many vocational psychologists will argue that too little is known about vocationally relevant decisions to warrant use of these concepts and will agree with Brayfield's (16) verdict that practical applications are distant but "increased interest in the possibilities may be anticipated".

Pepinsky (85). writing many years earlier, comments: ". . . As presently developed, theories of risky choices and of game strategies have limited assumptions that cannot be satisfied in counselling or other complex interpersonal situations. Empirical studies of the decision making process, however, can be expected to contribute toward the understanding of client behavior".

The material in this section is arranged into two groups:-

(1) Contributions dealing with decisions and decision making in a descriptive form, e.g., Blau's (8) framework within which careers decisions are made; Hilton's (51) review of career decision models and his cognitive dissonance model - these are trait matching, personality, sociological and economic models; and Blatz's (7) analysis of decision variables. Blau's contribution is interdisciplinary. Hilton is concerned with motivation and Blatz is developmental; and

(2) Applications of decision theory concepts to educational and vocational development, e.g., choice under conditions of uncertainty or risk (utility for risk). Propensity for risky behaviour may be regarded as a personality variable.

Blau et al. (8) discuss the question of vocational choice from the viewpoints of psychologist, economist and sociologist. The psychologist concentrates on personality and motivation, regarding social and economic structure as a limiting factor; the economist examines issues such as wage structure and labour force flow, the psychological motives through which socio economic forces become effective being taken as given; and the sociologist looks to such variables as stratified social structure and parental status, the economic structure and psychological make up of the person being kept in the background. Blau's approach is developmental. The individual, as he moves through various stages of vocational development, is confronted by a narrowing of alternatives, i.e., choice within limits imposed by variations in knowledge, rationality and the effects of previous decisions. Vocational preferences crystallise but first preferences are not necessarily translated into action. Processes of choice within the individual interact with institutional processes of selection. Vocational choice is a compromise process that may be conceptualised for the individual as motivated by interrelated sets of factors:-

(1) individual's valuation of rewards offered by different

alternatives, i.e., his preferences; and

(2) individual's appraisal of chances of being able to realise each of the alternatives.

At any choice point, the socio economic structure as well as personal factors (psychological and physiological) have determined and are currently determining the skills and interests, the opportunities and requirements for entry that are relevant. At this point, the preference and expectancy hierarchies of the individual and the ideal standards and realistic estimates of the selector are the relevant determinants. More remote determinants, e.g., in the case of the individual, his level of occupational information, technical qualifications, social role characteristics, reward value hierarchy, socio psychological attributes, general level of knowledge, abilities, educational level, social position and relations, orientation to occupational life and in the case of the selector: demand conditions, functional job requirements, non functional requirements, e.g., religion, good looks, amounts and types of rewards offered, organisational policies, stage of the business, etc., may be correlated with type and level of choice but research preoccupation with such determinants does not explain the nature of the choice process.[1] Blau is not presenting a theory of vocational choice but rather a framework within which research may be attempted.

Hilton (51) reviews a variety of career decision making models:
(1) Attribute matching in which the individual takes an inventory of personal attributes, ascertains the attributes required for successful adjustment in each of some set of occupations and chooses the occupation whose requirements best match his attributes. The extent to which this process is attempted without external assistance is not specified.

(2) Need reduction in which the individual gravitates with varying degrees of awareness to occupations which satisfy his needs.

(3) Probable gain in which the individual, faced with a set of alternatives plus related outcomes which have a certain utility for him and a certain probability of occurrence, will choose an alternative which

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[1] Writers who use the phrase "career decision making" generally do not distinguish between the decision process, preference and resulting action. Blau et al. discuss habitual action not preceded by deliberate decisions as opposed to problem solving behaviour which is governed by explicit choices. Tiedeman (122) extends decision to cover both pre and post phases. The assumption that action resulting from unconscious motivation involves the notion of decision is debatable.

either minimises his maximum expected loss or maximises his expected gain. Such a model is derived from rational models of behaviour and requires complete information and foresight, complete mobility and pure competition and scarcely agrees with known facts about vocational choice.

(4) Social structure in which individual mobility is limited by various social systems through which his career carries him.

(5) Complex information processing in which the individual's capacity for solving complex problems is limited compared with the dimensions of problems whose solution is required for objectively rational behaviour in the sense of (3). This is the principle of bounded rationality proposed by Simon (102). The individual searches for outcomes that are satisfactory. Choice takes place on the basis of a subset of premises derived from occupancy of specified roles and is adaptive only within the limits set by these given premises.

Hilton presents a summary of criticisms of the various models, e.g., the difference between preference and choice not allowed for in the attribute matching model, the failure of both the attribute matching and need reduction models to tackle the question of the choice process. He recognises that counselling practice provides evidence of self assessment by the client and proposes a career decision making model using such self statements as premises.

In his view the requirements of such a model are:-

1. include a way of conceptualising career decision making, e.g., by a flowchart;
2. specify commencement and termination of decision making; and
3. account for behaviour when the individual is unable to find a suitable alternative.

He presents a model based on the concept of cognitive dissonance as a motivating factor, with the modification - no reason is stated - that dissonance precedes and facilitates decision making rather than follows it as Festinger specified. The model is arranged in the form of a computer flowchart (see Appendix 1X). Input from the environment, e.g., having to decide whether to accept A or B may raise dissonance above a tolerable level. The individual examines his premises, i.e., his beliefs and expectations about himself and his environment. If the premises can be changed to accommodate the input, the change is made and the revised set tested for dissonance. If the premises cannot be changed, the individual searches for alternatives, selects an alternative plan and tests for dissonance. If dissonance is below the threshold a decision is made to accept the tentative plan. If, in either case, dissonance is above the threshold, the process is repeated. By implication, the process is conscious although Hilton accepts that unconscious processes probably influence the order in which alternatives are considered and the energy decision makers will expend in endeavouring to make certain alternatives less dissonant by revising premises.

Hilton discusses factors which increase dissonance, e.g., high opportunity for change of occupation, proximity to choice point, high heterogeneity among alternatives and speculates about dissonance reducing strategies, e.g., deferment of decision, premise manipulation by the decision maker.

Fleming (36) question Hilton's use of dissonance unless the latter means anticipatory dissonance which, in turn, implies that the decision is affected by the dissonance that might be expected no matter what the choice might be. In this context, dissonance loses its original meaning.

Blatz (7) writes about decisions in general. His paper is interesting for two reasons:

(1) the presentation of variables derived from an introspective analysis of the phenomena of decision making; and

(2) his suggestion that each variable represents a continuum for which a scale may be constructed and incorporated in a mathematical model". . . which will predict what an individual (not a group) will do (not may do) in a specific situation . . ." - this represents a challenge to the mathematician rather than a statement of the present status of mathematical decision theory.

The continua are:

1. Urgent —————————— Trivial
2. Irretrievable —————————— Recoverable
3. Automatized —————————— Unique
4. Acceptable ——— Ethics ——— Unacceptable
5. Fascination ——— Anxiety ——— Repugnance
6. Basic ——— Motivation ——— Acquired

like —————————— dislike
dominance —————————— submission

1 to 6 refer to the pre choice phase.

7. Determinate —— Causality —— Capricious

8. Certainty —— Knowledge —— Doubt

9. Independent —— Acceptance —— Dependent

10.. Immediate —— Time —— Ultimate

7 to 10 represent consequences and causality. Discussion of the continua illustrates their meaning:

1. An urgent decision may be whether to enrol in course A or course B. A trivial decision may be whether to put on the left or right sock first. Clearly some decisions are more important than others.

2. Literally speaking, no decision can be made again. Some decisions are recoverable, e.g., the individual may change from job A to job B. Others, however, are irretrievable, e.g., jumping into space from an aeroplane.

3. Automatized is represented, for example, in turning a door knob and the unique in the first decision made by a novice in a profession.

4. Ethics probably can not be represented on a scale.

5. Anxiety is an inevitable concomitant of decision making. It is not necessarily unpleasant.

6. The like to dislike continuum runs through a point of indifference. Mathematical models in economics suggest that indifference can be represented on a continuum.

7. The individual stands somewhere between a concept of the universe that is deterministic or wholly capricious. He may not explicitly accept causality as a concept. At any given time decision is a function of the individual's position on this scale, a position which may vary from time to time.

8. Refinement and improvement of judgment is related to the accuracy of the individual's predictions of consequences of previous decisions. Adequacy and accuracy of knowledge depends upon experience and use of authorities.

9. Acceptance or rejection of consequences is important early in development. Acceptance implies security. (Blatz proposes a security model of human development in which the individual moves from "immature dependent security", i.e., dependence on the parent in decisions to "independent security", i.e., expends effort, learns, acquires knowledge, makes decisions independently and accepts

consequences. Movement to "independent security" is not inevitable. The individual may revert to "immature dependent security", or exhibit neurotic patterns, both maladaptive, or turn to a "mature agent", e. g., an intimate outside the family who serves in place of "immature agents" from whom emancipation has been gained.)

10. The more immediate the consequences of an act the more probable is refinement of judgment in future decisions. Some consequences are immediate. One reason for university failure may be inability to project consequences of present actions to a point some four years away.

Friedman and Savage (39) in a paper designed to show that certain reactions to risk can be rationalised by an extension of orthodox utility analysis discuss the similarity of insurance and gambling to a much broader range of economic choices of which choice of an occupation is given as an example. In insurance a certain loss is accepted, viz., the premium, in preference to the combination of a small chance of a large loss and a large chance of a small loss. Different occupations offer the prospect of variability in promised income. A career in the public service, for example, offers the almost certain prospect of a clearly defined income within narrow limits. For the movie star, the probable maximum income is much greater with little prospect of attainment. It is possible to assign to different occupations different degrees of risk. Individuals come to the choice situation with different degrees of preference for certainty. The authors advance the view that the decision maker does not have to be aware of the varying degrees of risk involved. Thus, as might be expected, the choice process is explained in terms of an external rather than an internal frame of reference. The main burden of the paper is to demonstrate the application of utility analysis to risky choices by showing that diminishing marginal utility is unnecessary in riskless choice analysis and that indifference curve analysis provides a way of handling both types of choice, riskless in terms of the ordinal properties of utility functions and risky using the numerical properties of the functions.

Ziller (135) applies the risk concept to a psychologically oriented study of vocational choice. Occupations vary with respect to (a) prize, i. e., gain if successful, (b) price, i. e., loss in event of failure and probability of success expressed as the number who succeed over the number who enter. It is expected that risky occupations will be entered by those with high utility for risk and less risky occupations by those with lower utility for risk. Using a measure of utility for risk derived from an achievement test in which subjects are aware that they will be penalised for incorrect guesses, Ziller shows that mean risk scores are significantly related to certain training groups in the expected way, e. g., the mean risk scores for sales group are higher than those for engineers.

Stone (105) seeks confirmation of Ziller's results in a similar kind of study. Utility for risk is not differentiated by sex, college year or occupational training groups. Himelstein and Blaskovics (52) apply the risk variable to prediction of combat effectiveness. Interest in activities judged to require risk and strategy is considered to reflect propensity for risk. This variable is assessed by a suitable biographical inventory. An intermediate criterion of combat effectiveness is provided by peer ratings of combat potential and selection of combat branches. Risk scale scores are expected to be positively correlated with ratings and to differentiate combat from non combat groups. The results offer limited support for the hypothesis.

Individual differences in propensity to enter a risk continuum are used in two studies (69, 72) which utilise the theoretical framework of McClelland and Atkinsons studies of the achievement motive. Mahone (69) investigates the thesis that subjects who are fearful of failure tend to be unrealistic in their vocational choice. Anxious concern about avoiding failure is assessed by means of low achievement scores on a thematic apperception test of achievement imagery and an anxiety scale. Other data about vocational objectives is obtained from a vocational information questionnaire and all subjects complete a general ability test and the SVIB.

Four criteria of realism are used:-

1. discrepancy between measured ability and ability judged necessary for the occupation to which each subject aspires;

2. discrepancy between subject's perceived ability and the level of ability perceived by the subject as necessary for the occupation to which he aspires;

3. degree of accuracy of each subject's estimation of own ability; and

4. choice of an occupation which reflects a pattern of interests discrepant with the subject's measured pattern.

Level of aspiration is indicated by the level of ability judged to be required for preferred occupation. In terms of the theoretical orientation it is expected that those subjects fearful of failure will over or under aspire, avoiding the intermediate range of the risk continuum and in the present context express preferences in the least probable range of achievement. Significant differences in the predicted directions are reported.

Meyer, Walker and Litwin (72) examine the motive patterns of entrepreneurial and non entrepreneurial functions in an industrial setting. It is expected that the two functions will differ significantly in terms of achievement motive, the entrepreneurial group having the higher scores and that the entrepreneurial group will prefer intermediate odds in the risk continuum. Subjects are interviewed to assess their attitudes towards the entrepreneurial aspects of work, it being expected that those with favourable attitudes will have higher achievement scores. Results of the study show (1) significant differentiation between the two groups on the achievement motive (2) preference for intermediate odds by the entrepreneurial group. Other results are:-

(1) motive patterns are not related to assessed attitudes; and

(2) risk preferences are not related to achievement need scores.

Grade utility, i.e., educational achievement grades, as an index of level of aspiration is experimentally investigated by Becker and Siegel (2). Their results indicate a high positive correlation between grade utility, assessed in a gambling situation, and interviewer estimates of level of aspiration in terms of grades. McDaniel, Halter and Hartford (68) apply grade utility, calculated in a decision theory context, to the area of academic prediction. Such a study represents a practical application of Becker and Siegel's work. The addition of grade utility to measured ability in predicting grade point average yields a negligible increase in the size of the correlation. Thus, although grade utility is a valid index of level of aspiration it is not significantly related to subsequent grade performance.

PART II

Part II contains more detailed summaries of research studies discussed in Part I. In addition, some studies not referred to in Part I are included. The latter group in some instances, reflect trends peripheral to the main theme of this document, e.g., studies of occupational stereotypes and work value orientations (42, 62, 63, 81, 130). Summaries are arranged in alphabetical order according to the surname of the senior author.

Material is presented under six headings:-

1. Theoretical Orientation. The results of previous research are linked with the topic under investigation
2. Hypothesis. Where a formal hypothesis is stated it is presented as given by the author.
3. Subjects. The number and type of subjects are stated, e.g., 150 male sophomore students.
4. Method. Complete description of method would have made the summaries too lengthy Details have been restricted to, for example, instruments used, method and order of presentation, method of allocating subjects to various groups.
5. Results Presentation of results in table form was not attempted and, in general, brief verbal summaries are given.
6. Discussion. A discussion heading is not included for all summaries. When given, it incorporates author's comments about results and limitations

It should be remembered that the summaries are based on journal articles which, in many instances, are themselves condensed versions of doctoral dissertations or of studies undertaken for other purposes.

BECKER S.W. and SIEGEL S.: "Utility of grades" level of aspiration in a decision theory context". J exp. Psychol., 1958, 55, 81-85.

Theoretical Orientation:

When a person is presented with a task whose outcome can be measured on an achievement scale, he may strive for a particular goal or level of achievement on that scale. Level of aspiration refers to this goal. An achievement scale may be thought of as a utility scale on which each achievement goal has utility for the person.

Hypothesis (refer to method for further details):

(1) Those subjects who do not wait for an interview will be subjects on whose ordered metric scales of utility of grades the largest distance is between D and F.

(2) There will be a positive correlation between subjects' level of aspiration as expressed in the interviews and their levels of aspiration as given by their scales of utility of grades (on which the grade at the upper bound of the largest distance is taken as level of aspiration).

Subjects:

23 volunteer subjects from an introductory statistics class.

Method:

The subjects are offered an opportunity to gamble for midterm grades in lieu of taking midterm test. Of 50 class members, 23 accept the offer. A series of alternative gambles is offered in a test booklet from which it is possible to obtain individual ordered metric scales. The alternatives are in the form:-

Would you prefer a 50-50 chance of

1. Alternative 1 -
an A or an F

2. Alternative 2 -
a B or a D

There are 15 alternatives. Subjects are advised that a page will be selected at random from the booklet and will constitute the basis for midterm grade. Then, by a ruse, based upon a group decision procedure, subjects learn they each have won a

C Those dissatisfied are advised that they can have an individual interview in which "something could be arranged (perhaps in terms of extra work) so that your grade might be raised". The subjects are deliberately kept waiting longer than indicated for this interview The questions asked are intended to gain information for an independent assessment of each subject's level of aspiration for midterm goal.

From the first procedure a protocol of utility for grades is constructed in the form:

Offer	Alternatives	Choice	Distance
1.	A or C vs. $\underline{\text{B or B}}$	$AC < BB$	$\overline{AB} < \overline{BC}$

and so on for the 15 alternatives The underlined choice is the one actually selected. As presented it means that this S chooses a certain B rather than a 50-50 win for A or C. It is recorded $AC < BB$. From this it can be shown that the difference in utility between an A and a B is less than the difference between a B and a C From each protocol the choices necessary to determine each ordered metric scale are obtained

Example:

$$\underline{A\ \ B\qquad\qquad\qquad\qquad\qquad\qquad C\ \ D\ \ F}$$
$$\overline{BC}\quad \overline{CD}\quad \overline{DF}\quad AB$$

For this subject B is level of aspiration, having the largest distance between it and the next lower goal.

From the interviews four sorts of information are abstracted:- (1) desired grade (2) expected grade (3) lowest satisfactory grade (4) number of hours willing to work at clerical task to to affect a one level increase in grade.

The two experimenters independently estimate level of aspiration on the basis of this information assigning them to grades.

For hypothesis 1 it is not expected that any S aspiring for less than a C will remain for the interview. For hypothesis 2, the interview is intended to allow an independent assessment of each S's level of aspiration against which to compare his scale of utility of grades.

Results:

20/23 S's have consistent and transitive ordered metric scales. Thus 20 S's are included in the hypothesis tests.

Hypothesis 1. Four S's leave the room and do not seek interviews. Each have a scale of utility of grades on which largest distance is between D and F.

Hypothesis 2. The correlation between the ranks of S's levels of aspiration by scale and interview assessment is $r = .83$ ($P < .001$).

BEILIN H.: "The mobility and achievement of a 1926 class of high school graduates". J. counsel. Psychol., 1954, 1, 144-148.

Theoretical Orientation:

This study is not conducted within any theoretical framework. It is one of the Career Pattern Studies and its interest lies primarily in the fact that the subjects are Middletown high school graduates The same community is the locus for the current C.P.S twenty year longitudinal study of vocational development described elsewhere in this paper.

Hypothesis:

(1) To achieve economic success it has been necessary for a major proportion of the youth of the original class to leave their own community and its immediate environs

(2) The geographical mobility of the women in the sample is related to the occupational status of the men they marry.

(3) There are significant differences in the *Regents' examination averages for persons in different occupational groups.

(4) Those who attended college have higher Regents' averages than the non college group.

(5) Those who attended college tend to achieve higher occupational status.

Subjects:

Surviving members of 1926 high school graduation class are included (males = 36; females = 47). Up to date information about location, status is obtainable as at 1951. Regents marks are available from records.

Method:

Criteria of success are based on D.O.T. classifications.

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*Regents' examinations are administered at the end of a subject sequence and are regarded as a comprehensive assay of learning in that period.

Results:

Hypothesis 1. Analysis of data by D. O. T. classification by present geographical location tend to refute the hypothesis that one needs to go elsewhere to achieve economic independence. An uncontrolled factor lies in what might have happened status-wise to the group that left Middletown had it remained there. Approximately 66% of the males left Middletown. The population has remained static for a long period so that for those leaving the community replacement from elsewhere occurs. No data on economic achievement of immigrants is available.

Hypothesis 2. 61% of females remained in Middletown. In the main they married Middletown men. For all the women, i. e., those still resident in Middletown and those not so resident, analysis of the occupational status of their husbands does not support hypothesis 2.

Hypothesis 3. Data about Regents' marks supports differentiation between professional and managerial groups ($P < .10$) and between professional and semi-skilled groups ($P < .01$).

Hypothesis 4. Male graduates from college differ significantly from non graduates ($P < .01$). For females, however, those not proceeding beyond high school show a slightly higher average Regents' mark than those with college degrees or those proceeding beyond high school without obtaining a college degree. The difference is not significant.

Hypothesis 5. For males, those obtaining a college degree achieve fairly high socio-economic status. A college degree is more necessary for status achievement in a profession than in executive or managerial positions.

Discussion:

This study is not particularly important to the purpose of the literature survey. It is included for the reason stated in the theoretical orientation.

BLOCHER D.H. and SCHULTZ R.A.: "Relationships among self-descriptions, occupational stereotypes and vocational preferences". J. counsel. Psychol., 1961, 8, 314-317.

Theoretical Orientation:

Various theorists have emphasised the role of the self concept in vocational development. It is possible to conceive of a special vocational self concept composed of those distinctive patterns of attitudes, ideas, feelings, etc., which a person holds about himself in relation to work. Similarly the individual may be presumed to have stereotypes about people in various occupations. These two variables, pictures of self and others in specified positions, may be relevant to vocational development. The authors suggest that expressed interest in an occupation may vary directly with the degree of acceptance of the occupational stereotype as self descriptive or self-enhancing.

Hypothesis:

(1) An individual's self description, i.e, his vocational self concept operationally defined will be more nearly like his stereotype of a typical member of an occupation for which he expresses high interest than this same self-description will resemble the stereotype held for an occupation in which little interest is claimed.

(2) A similar set of relationships will hold between descriptions of ideal self and these two kinds of occupational stereotypes.

Subjects:

135, 12th grade boys, in an American high school - above average in I.Q., socio-economic status and educational and vocational aspiration.

Method:

The instrument is a 180 item list of words and phrases, (D.C.L.), based upon Cattell's trait clusters. Data is collected on two separate occasions. On first occasion each subject gives self and ideal self description on D.C.L., together with selection of most and least interesting occupation from a list of 45 commonly scored occupations on S.V.I.B. On second occasion each subject, again using D.C.L., describes a typical member of the two occupations selected on first occasion. Similarity scores (Cronbach's d^2) are calculated between self-stereotype and ideal self-stereotype and compared for high and low interest groups.

Results:

The mean similarity score based upon congruence between self descriptions and high-interest stereotypes is greater than mean similarity score based upon congruence between self and low-interest stereotype ($P < .01$). Same result is obtained for ideal self and occupational stereotype ($P < .01$). The authors conclude that data support theoretical reasoning and hypotheses.

Discussion:

The authors comment on two limitations, viz., atypically of same and the exploratory nature of the instrument used.

BLOCHER D.H. and SHUTZ R.A.: "Self satisfaction and level of occupational choice". Personnel guid. J., 1961, 38, 595-598.

Theoretical Orientation:

Holland's theory links the self concept to vocational aspiration. He contends that level of occupational choice within a given class of occupation is in part a function of self-evaluation and that the latter concept may be defined by the OL scale of the S.V.I.B. A person's score on the OL scale reflects status needs, perception of his level of competence and potential and his self-estimate of worth with respect to others. Holland suggests that self concept measures might be used to explore determination of level of choice.

Hypothesis:

To determine the relationship between (1) a quantitative measure of self satisfaction and (2) OL scale of S.V.I.B.

Subjects:

135 male 12th grade senior high school pupils. This group is used since senior high school students are expected to be engaged in vocational planning. The group is atypical in terms of (1) educational level (2) socio-economic status, being above average in both.

Method:

The measure of self satisfaction is based on the DCL (see other study by same authors) and reflects the degree of identification with ideal self concept. In operational terms, it is the degree of similarity between self and ideal self descriptions.

The S.V.I.B. is administered three weeks before the DCL. The DCL self and ideal self descriptions are separated by a brief unrelated task. Similarity measure is Cronbach and Gleser's d^2.

Results:

Both distributions are checked for normality. The OL scores are found to be normally distributed but not so with the self satisfaction measure. This distribution is normalized by T scaling and the product moment correlation between the two sets of scores calculated ($r = 0.34$; $p < .01$).

Discussion:

The study offers limited support for Holland's contention that a person's level of occupational choice reflects self-evaluation. The relationship, though significant is not necessarily of marked practical importance. There are two possible limitations to the study (1) the newness of the DCL which was specially developed for the study (2) atypicality of the population.

BOGARD H.M.: "Union and management trainees - a comparative study of personality and occupational choice". J. appl. Psychol. 1960, 44, 56-63.

Theoretical Orientation:

This study is planned within the general context that occupational personalities exist and that certain kinds of people tend to enter specific occupations. Its locus is the problem of management succession and the appraisal of candidates for advancement.

Hypothesis:

To determine whether individuals considered by top union and management executives to be worthy material for training for leadership positions are different from each other in psychological areas.

Subjects:

40 International Ladies Garment Workers Union leadership trainees and 40 Grace Line Inc. management trainees. Average union age = 24.83; management mean age = 27.75. Management trainees are generally of higher educational level (same for subjects' fathers), higher I.Q. and have higher marriage frequency at time of the study.

Method:

The author comments that other studies within the same context frequently fail to precede selection of tests by adequate job study, with particular emphasis on personality demands of the job. In this respect, he comments favourably on Segal's study.

Following interviews with executives of both groups "ideal" types are described. Then, after proposing that specific kinds of early life experiences are signficant in determing presently revealed personality traits, four hypotheses built upon "typical" union and management leaders are formulated (these are not stated). It is assumed that differences will be most apparent in:-

(1) social class identification
(2) values
(3) personality characteristics
(4) biographical and developmental experiences.

1, 2, and 3 are assessed by Sims SCI Occupational Rating Scale, the Allport-Vernon-Lindzey Study of Values and the California Psychological Inventory respectively. 4 is assessed by a specially constructed inventory refined into 5 variables.

1. Relationships with authority figures.
2. Maternal control of the family.
3. Age and severity of independence training.
4. Success in peer group relationships.
5. Social conformity of the family.

There are 15 sub hypotheses related in varying numbers to each assessment scale. The actual hypotheses and results are given in the following section.

The results are reproduced in full to illustrate the type of study criticised by Cooley. Bogard, quite properly, resists any temptation to portray a typical union or management leadership trainee and emphasizes the presence of within group difference and overlapping distribution.

Results:

		Union		Management		P
		x	SD	x	SD	x
SCI	1. Union group identifies with a lower social group than does the management group.	16.97	5.67	25.84	4.07	>.05
AVL	2. The union group reveals higher social values	46.27	5.96	32.00	7.58	>.01
	3. The union group demonstrates lower economic values	37.75	7.71	45.95	5.78	<.01
CPI *	4. The union group scores lower on self-control.	27.65	7.52	29.25	7.03	N.S.
	5. The union group scores higher in psychological-mindedness.	12.73	2.63	13.33	2.15	N.S.
	6. The union group scores higher in responsibility	29.78	3.99	32.65	4.77	<.05*
	7. The union group scores higher in socialization.	33.97	5.55	36.02	4.30	<.05*

		Union		Management		P
		x	SD	x	SD	
CPI *	8. Both the union and management groups score high in dominance	33.20	4.38	34.90	1.64	-ϕ
	9. Both the union and management groups score high in self-acceptance	32.72	3.01	24.30	8.64	-ϕ
	10. The union group scores higher in feminity.	16.75	3.01	15.5	2.99	< .05
Bio. Inventory	11. The union group has had a greater number of oppositional relationships with authority figures.	12.19	7.96	6.22	3.79	< .05
	12. The union group has had a greater number of rejecting experiences in peer group relationships and social participation.	3.98	2.82	2.03	1.59	< .05
	13. The union group, during childhood and adolescence was supervised by a family which, in contrast to the management group, was:					
	a. maternally controlled,	6.13	3.47	5.87	3.23	N.S.
	b. stressed social conformity,	4.55	3.23	2.70	2.25	< .01
	c. valued early independence training.	8.77	2.63	6.20	2.84	< .01

* underlined words are scales of CPI
x in opposite direction
ϕ based on norms, not significance tests.

CASS J.C. and TIEDEMAN D.V.: "Vocational development and the election of a high school curriculum". Personnel guid. J., 1960, 38, 538-545.

Theoretical Orientation:

This study is concerned with prediction of curriculum choices after two years in high school. Although the study does not involve any empirical data relating to self, the authors relate such curriculum elections to vocational development theory.

Hypothesis:

There is no formal hypothesis. Success in anticipating curriculum choices is the objective.

Subjects:

446 Maime high school pupils. At the time of entry, data is available for 884 subjects. Attrition over a two year period accounts for the difference. The 446 are divided into two groups: (1) experimental (2/3) and (2) check sample (1/3). They constitute those who make an election and do not find the first two years too difficult, i.e., average of 75+ in finals.

Method:

Data on 18 variables is collected at time of entry, e.g., aptitude and interest tests, age, sex, family income. The curriculum choice areas are: college preparatory, general, commercial, home economics, industrial arts and agriculture. Applying the discriminant analysis to the experimental group data, three discriminant functions are obtained accounting for about 95% of the total discriminating variation. The discriminants are then applied to the check sample and predictions of choices compared with actual choices.

Results:

As already indicated three discriminant functions are found from the experimental group data. Sex is by far the most important variable in discriminant one, no other variable rising above 1/6 of its importance. On this discriminant, industrial arts and agriculture (elected only by boys) are distinct from home economics (girls only) and to a lesser extent, commercial, college and general (mixed by sex). The second discriminant is characterised by age and outdoor clerical and persuasive interests at one end and family income, mechanical comprehension and interest, along with computational, musical and literary interests at the other. The projections of the centroids of the six groups onto this function clearly separates the college group from the remaining five. The third discriminant is defined by interests in computational and outdoor activities and separates the industrial arts and agriculture groups, leaving the remaining four groups undifferentiated.

In summary, the sex variable dominates the first discriminant and clearly differentiates the two areas of vocational education for each sex. The second discriminant differentiates the college oriented group from the remainder but largely in terms of age for grade, family circumstances and orientation to "academic" as opposed to "doing" areas.

COOLEY W.W.: "Predicting choice of a career in scientific research". Personnel guid. J., 1963, XLII, 21-27.

Theoretical Orientation:

This report covers a section of the Harvard Scientific Careers Study. The Harvard Study seeks to remedy the deficiencies of retrospective type studies, e.g., Roe's studies of eminent scientists by employing a five year overlapping longitudinal design to investigate the critical 16 years of the developmental process (grade 5 through college senior to graduation) of becoming a scientist. Cooley's article refers to a particular decision made by the two older groups (college males, sophomores and seniors, majoring in science), viz., whether or not to attempt a career in basic scientific research.

Hypothesis:

The purpose of the study is to determine to what extent this particular career decision, viz., whether or not to attempt a career in basic scientific research, could have been predicted from personality measurements made on these students two or four years previously.

Subjects:

91 seniors and 105 sophomores tested during the academic year 1958-1959, the tests being (1) Guilford-Zimmerman Temperament Survey (2) Allport-Vernon-Lindzey Study of Values (3) Strong Voc. Interest Blank (4) Individual Rorschach Test (5) Test of Imagination (T.A.T., scored for n ach., n aff. and n power).

Method:

Data is collected annually by questionnaire, attention being focussed on educational decisions, career plans, actual job decisions and long-range career goals. On the basis of this sort of data, the two groups, i.e., sophomore senior entrants in 1958-1959, are classified into (1) research (2) non research groups. The statistical model is a discriminant space classification, i.e., given m groups in this case 2 and a one dimensional discriminant space to represent a pattern of test scores, then it is possible to estimate the probability that individual i is a member of either group (see also studies in Harvard Career Development series, viz., Dunn, French, Tiedeman and Bryan, Tiedeman and Sternberg, and also study by R.C. Hall). Essentially in this case, the task is that of comparing the test profile of an individual with members of a known group. Using the college senior data a series of two group discriminant analyses are performed for the five personality tests resulting in the conclusion that the A.V.L., S.V.I.B. and G.Z. are significant predictors of decision to enter research. Then applying these results to make predictions about sophomore decisions which, in fact, can be compared against actual sophomore follow up data the percentage "hit" rate is assessed.

Results:

The percentage "hit" rates for sophomores based upon the separations achieved with the senior data indicate that the R - NR group differences are sufficiently stable to allow correct predictions 75% of the time using only personality measures, i.e., the decision that sophomores will turn to research careers three or four years later is predictable with 75% accuracy.

A further analysis is reported, viz., which of the 27 scales of the A.V.L., S.V.I.B. and G.Z. are significantly related to becoming a research worker in science 20 scales are so-related. An analysis is made of the original items to determine the types of responses necessary for high and low scores on the scales and from these verbal descriptions are prepared, e.g., Theoretical scale of A.V.L.: values discovery of truth; seeks to observe and to reason.

The author warns against the temptation to portray the typical research worker on the basis of such descriptions because within group variation will be obscured. (Refer also to Cooley W.W. Attributes of potential scientists.)

CRITES J.O.: "Ego strength in relation to vocational interest development". J. counsel. Psychol., 1960, 7, 137-143.

Theoretical Orientation:

This research is concerned with explanation of vocational interest phenomena in terms of ego, rather than self and occupational roles. How are interest organised into levels and patterns? What processes are involved and what are their relationships to personality functioning? In analytic terms ego functions include reality testing, compromising, planning and delaying gratifications. Are individual differences in ego strength related to variations in organisational features of vocational interest development. Previous research suggests that: (1) intelligence is related to ego strength, occupational interest level and degree of interest patterning and the latter to chronological age; and (2) ego strength is associated with the evaluation of achievement and endurance needs on the one hand and onset of the crystallization stage in occupational choice determination on the other.

Hypothesis:

(1) Ego strength is related positively to occupational interest level since the greater the ego strength the greater the need to achieve and the greater the need to achieve the higher the level of vocational aspiration and vocational interest.

(2) Ego strength is related positively to degree of interest patterning because strong ego functions, particularly those involving delay of immediate gratification, permit greater focussing of interests in specific areas through the inhibition of transitory interests in irrelevant activities. This relationship will exist only after the stage of crystallization of interests into discernable clusters.

Subjects:

100 male subjects, State University of Iowa for whom M.M.P.I. and S.V.I.B. data are available from counselling centre records. It is not a random sample but one representative of vocational-educational problems in short term counselling interviews (2-3 interviews).

Method:

Since intelligence is related to ego strength and occupational interest level and patterning and the latter to age, control of intelligence and age is necessary. The former is controlled by partialling and the latter by differential predictions related to stages in vocational development. Interest patterning occurs in late adolescence. Thus in the analysis of results the subjects are divided into a younger group (< 21) and an older group (> 21). The measures used are the Es scale of M. M. P. I., OL scale of S. V. I. B. and interest patterning is assessed by a count of A's and B+'s on the S. V. I. B. profile sheet (the primary patterns of Darley and Hagenah). Crites provides some validity data supporting use of primaries as basis for interest patterning.

Results:

The results support increased interest patterning with the older group. The relationship between ego strength and interest patterning is .45 (.46 intelligence partialled) for group ≥ 21 years. No such relation obtains with group < 21 ($r = .09$) as is expected. The hypothesis of positive relationship between ego strength and occupational level is not supported $r = .22$ (> 21) : $r = .06$ (< 21) and intelligence is not significantly related to ego strength or interest patterning but is so related to OL [$r = .36$ (≤ 21) : $r = .30$ (< 21)]. Occupational level and interest patterning are negatively related ($r = -.30$ approx. in both groups).

Discussion:

In discussing results, Crites speculates about hypothesis I and suggests that, although ego strength is related to achievement and aspiration needs, these factors are not related to occupational level. He cites other evidence that the OL scale measures status of interests rather than drive (see Holland's theory) and suggests that level is related to sociological variables. Discussing, confirmation of hypothesis II, he suggests that further definition and specification of the role of ego functions (reality, testing, compromise, planning and delaying) in interest pattern development is necessary. Secondly, he points to antecedent conditions and development of ego functions and crystallized interest patterns. Research suggests that identification with accepting parents is essential to inhibitory and planning capacities as well as formation of unambiguous interest patterns. Conditions that prevent identification, e.g., Roe's emotional concentration or avoidance patterns in parents will adversely affect ego strength and interest pattern development. Ego strength and interest patterning may be positively related to parental acceptance and negatively to avoidance and concentration. He further suggests that his evidence (1) supports for the older group the view that Ss high on OL and low on patterning have less ego strength and that those low on OL and high on patterning have greater ego strength and (2) suggests that vocational counselling be preceded by personal counselling aimed at more effective ego functioning, i. e., removal of anxiety to free the client's ego processes for effective problem solving in the later stages of counselling.

DAVIS D., HAGAN N and STROUF J.: "Occupational choice of twelve year olds". Personnel guid. J., 1962, XL, 628-629.

Theoretical Orientation:

This study is a test of Ginzberg's theory that the process of occupational choice can be analyzed into three stages, viz., fantasy, tentative and realistic choices.

Hypothesis:

Do 12 year olds make more tentative choices than fantasy ones? Are these choices a function of age only or are such factors as socio-economic environment, sex, race, intelligence and reading retardation influential?

Subjects:

Sixth grade pupils in three elementary schools in Michigan.

A - medium socio-economic neighbourhood - all white.
B - low socio-economic neighbourhood - $\frac{1}{2}$ white : $\frac{1}{2}$ negro.
C - low socio-economic neighbourhood - all negro.

All children complete a short essay telling what they would like to do and why. The papers are submitted to two judges for classification according to Ginzberg's definition.

Results:

Results are presented by contrasting boys with girls; whites with negroes; low socio-economic level with medium group; total sample with a group showing reading retardation and each school with the other.

Generally speaking, tentative choices (i.e., decisions based upon capacities, interests and values) were made by about 60% of the group. More mature choices correlate positively with intelligence and feminine sex and inversely with reading retardation but not with race or socio-economic environment.

DUNN, F.E.: "Two methods for predicting the selection of a college major". *J. counsel. Psychol.*, 1959, 6, 15-26

Theoretical Orientation:

In choice situations, counsellors typically use all available information, including (1) profiles (2) predictions of success in particular fields. This study investigates the validity of two procedures (1) multiple discriminant analysis (2) multiple regression analysis in predicting concentration fields actually chosen and successfully completed by a group of subjects

Hypothesis:

There are no specific hypotheses

Subjects:

1, 380 Brown University B.A. graduates in years 1949, 1950 and 1951.

Method:

The subjects are divided into an experimental group of 925 and a check group of 455. There are 14 concentration fields, e.g., Art, Biology, Economics, Modern languages, etc., and 13 variates, e.g., Scholastic Aptitude Test, Reading Test, etc. representing data collected at time of admission. The method is to take the experimental group data and calculate (1) the discriminant function and centour scores determining group membership and (2) by regression analysis which of the variates contribute most to the prediction of concentration field averages in each of the fields and also calculating variate weights.

The results of the experimental group are then applied to the check group and field choices based on:-

(1) in the case of discriminant analysis, centour scores nearest to group centroids to give 1st, 2nd and 3rd choices; and

(2) in the case of regression analysis, the three fields with the highest grade point predictions;

- are then compared with the choices actually made by the check sample.

Results:

Detailed results are not reported in this summary Reference should be made to the journal article for this information. The results are presented for the two procedures in terms of (1) "hits", i.e., the exact field chosen by the student was indicated (2) "near hits". i.e., a field in the same cluster was indicated (3) "misses" i.e., the field indicated was not even in the same cluster as the field actually chosen. Discriminant analysis results in more correct placements under two different conditions (1) naming the exact field chosen on the basis of the highest centour score alone (2) naming fields having the three highest centour scores. As expected, the last condition increases the number of correct placements.

Discussion:

The author concludes that discriminant analysis has an important role in counselling and education. She suggests that studies using "better" variates, e.g., interest and personality-measures might improve prediction. Correctly used, she sees the early placement of clients in group "clusters" rather than particular fields, as valuable in a developmental view of counselling. She questions the use of regression analysis in guidance problems.

*Comments:

(1) Multiple regression technique has been asked to do something it was not intended to do.

(2) Is efficacy in placing S in a major which he has already completed an acceptable criterion.

(3) Is the rationale acceptable? Is it a good thing to be sending to a field individuals like those already in it?

(4) Any statement to an individual about a field appropriate for him will become true or false on the basis of that person's experience of success in that field.

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* See P. Dressel. J. counsel. Psychol, 1959, 6, 26-27.

ENGLANDER M.E.: "A psychological analysisof vocational choice - teaching" J. counsel Psychol., 1960, 7, 257-264.

Theoretical Orientation:

Each individual seeks situations or otherwise behaves as to verify, preserve and otherwise fortify his self concept. Choice of a vocation is a situation in which the individual has an opportunity to maintain and enhance the self by selecting a vocation which is perceived as being consistent with the self concept.

Based upon preliminary interviews, factors perceived as being important to choice were determined. These factors are:-

(1) perception of personal characteristics
(2) perception of specific occupational features
(3) perception of peer and family attitudes
(4) perception of need for achievement and need for affiliation.

Hypothesis:

Three predictions are made:-

(1) Prospective elementary teachers will tend to perceive the personal characteristics of elementary teachers as congruent with the personal characteristics of the self to a greater degree than will those persons who have selected vocations other than elementary teaching

(2) Prospective elementary teachers will tend to perceive the features of elementary teaching as congruent with the features desired in an occupation for self to a greater degree than will those persons who have selected vocations other than elementary teaching.

(3) Prospective teachers will tend to perceive the attitudes of their (a) respective families and (b) respective friends as being more positive toward elementary teaching than those persons who have selected vocations other than elementary teaching.

The author comments that efforts to explore perception of need for achievement within the framework of self psychology proved unsuccessful.

Subjects:

126 female subjects classified into three groups: (1) those

who select elementary teaching as a major (2) other education majors (3) non education majors. Analysis of variance indicates homogeneity of groups with respect to age, socio-economic background and college aptitude.

Method:

Q sorts using 80 descriptive statements are obtained for perception of (1) self (2) elementary teachers and an index of congruency calculated by subtracting the number of disagreements from the number of agreements. Scales are also devised to identify (1) the index of congruency for perceptions of occupational features, i. e., features desired in an occupation vs. features available in elementary teaching and (2) others attitudes towards elementary teaching, i. e., families and friends.

Results:

Results for each prediction are presented as mean indices for each of the three groups and 't' values calculated. With respect to prediction I the three groups are significantly differentiated and the prediction confirmed. For the other predictions Groups I and III and Groups II and III are significantly differentiated but not Group I and II.

Discussion:

Commenting upon the failure of Groups I and II to be significantly differentiated, the author suggests two explanations:-

(1) the specific role, i. e., elementary vs. other teaching is dependent upon the appropriateness of more intimate personal variables whereas the variables studied delineate only board vocational selections;

(2) the instruments used allowed the subjects to relate the teaching situations to their chosen field. The scales are designated "elementary" but have been perceived as "teaching" by other education majors.

FRENCH W.L.: "Can a man's occupation be predicted?" J. counsel Psychol., 1959, 6, 95-99.

Theoretical Orientation:

Various studies have shown that occupational groupings can be differentiated by various measures. They have not, however, been concerned with seeing whether these variables point up differences between people before they are found in their respective occupations. The present study is concerned with determining the efficacy of certain variables obtained early in the career pattern in differentiating occupational group membership at a later stage.

Hypothesis:

There is no specific theory generated hypothesis.

Subjects:

232 Harvard Adult Development Study subjects.

Method:

The various measures are obtained for 1939-1942 entry groups and occupational descriptions as at graduating year plus nine, i.e., if a subject graduated in 1943, his occupation for the year 1952 is recorded. The job descriptions are then classified into groups such as accounting, advertising ... management ... public relations ... writing (a total of 30 groups). The measures include such as Alpha number and verbal, CEEB attainments tests, family income, psychotype, etc. (a total of 19 variables). The test data is then analysed for occupational group differences by (1) analysis of variance (2) multiple discriminant analysis.

Results:

Detailed results are not reported in this article. The author comments that there is considerable overlapping of occupational groupings on the measures singly and the nearness of individual discriminant scores to centroids of more than one occupation group suggests that occupational prediction is "no easy matter". Discrimination by certain variables, e.g., certain attainments tests, economic status of the family, interests, Sheldon's psychotypes and somatotype measures and neuroticism (Rorschach) suggests that "there are indeed forces and factors which direct men toward certain occupations and away from others".

GONYEA G.G.: "Job perceptions in relation to vocational preference". J. counsel. Psychol., 1963, 10, 20-26. (This summary should be related to the 1961 study of Gonyea.)

Theoretical Orientation:

Occupational choice is a transaction between the individual and his environment in which job perceptions are obviously involved. Perception of occupations is largely in terms of need satisfaction potential (Gonyea's own research) so that persons with different needs may be expected to view the same job differently, to perceive it in terms of dimensions most directly related to their needs and to emphasise these dimensions fairly consistently in their perceptions of various occupations.

Studies of job perceptions where the dimensions are imposed by the investigator show high agreement in terms of the dimensions (see Walker's study). However, when dimensions are not imposed, subjects select dimensions relevant to dominant needs and will tend to prefer occupations which they perceive as providing opportunity for such dominant need satisfaction. Response in terms of a dimension relevant to a need, e.g., helping occupation may occur in persons with, for example, a need not to nurture, in which case rejection of occupations so perceived is expected.

Hypothesis:

The purpose of the study is to test the proposition developed in the last paragraph of the theoretical orientation.

Subjects:

188 entering male freshmen at University of Maryland.

Method:

Each subject completes a Job Perception Blank comprising 30 occupations. For each title, each subject selects which one of the remaining 29 seems the most similar. Factor analysis of the resultant matrix produces 12 oblique factors presumably reflecting underlying perceptual dimensions.

Each subject also completes a Job Perception Blank comprising 30 titles each to be marked "like", "indifferent", or "dislike".

The Job Perception Blank is scored in the following way to yield a score for each dimension: each response receives one point for every dimension on which both stimulus and response jobs received significant factor loadings, the points are summed, yielding a set of scores representing the number of times that each subject employs each dimension. From this a Job Perception profile for each subject is prepared.

Next, each occupation in the Job Preference Blank is scored for every factor on which it loads signficantly: +1 for "like", 0 for "indifferent", and -1 for "dislike". Since it is argued (see theoretical orientation) that needs may be also reflected in negative preferences absolute values are considered and Job Preference calculated for each dimension. A Job Preference Profile for each subject is prepared.

On the assumption that people respond selectively to those stimulus properties most directly related to their needs, congruence between the two profiles is expected.

The Job Preference and Job Perception factor scores are analyzed in two ways (1) correlations for each factor (2) comparison of profile similarity for each subject using rho.

Results:

(1) Correlations between Job Perceptions and Job Preferences: Because both distributions reflect skewness, tau rather than r is used. The obtained tau coefficients range from -.04 to +.27 (tau values are typically smaller than r and rho values for the same data) and for six of the factors attain satistical significance (only 13/17 factors are included in the analysis since 4 factors are relatively meaningless). Response bias is evident in the Job Preference Blank, many subjects using only two of the three preference categories, which further reduces the correlation.

(2) Profile similarity: 71 of the rho's are positive and 47 negative. 11 coefficients differ significantly from zero in the predicted direction.

(3) Comparisons of vocational choice groups: Since the stated vocational choices are known the mean Job Preference scores for each dimension for 8 broad occupational groups (based on stated choice). A nonparametric analysis of variance fails to show relationship between job perceptions and vocational choice.

Discussion:

This study offers some support to the view that job perceptions are related to patterns of occupational preferences, rather than to specific vocational goals. In their job perceptions people utilize different dimensions, possibly reflecting different needs. People with similar job perceptions do not necessarily choose the same occupations; nor do people who choose the same vocation necessarily share the same job perceptions.

GRIGG A.E.: "Childhood experience with parental attitudes: a test of Roe's hypothesis". J. counsel. Psychol. 1959. 6. 153-155.

Theoretical Orientation:

Roe argues that early childhood experiences are determinants of orientation towards persons or nonpersons and that these orientations are related to vocational choice. She categorizes occupations into groups such as service business, general cultural and entertainment. suggesting that individuals in these groupings have an orientation towards persons originating as a response to parents who are emotionally warm and accepting. Individuals in technological, scientific or outdoor pursuits are oriented towards non-persons originating as a response to parents who are emotionally cold neglecting or rejecting.

Hypothesis:

That subjects identified with science and mathematics will report colder, less attentive parental treatment than those identified with nursing where parental treatment will be warmer and more child centred.

Subjects:

35 female graduate nurses undergoing further training for supervisory and teaching assignments: and 20 female graduate science students who express commitment to research rather than teaching.

Method:

Data is collected by a questionnaire containing items concerned with subjects' feelings of acceptance during childhood mothers' reactions to responsibilities of parenthood. etc.

Example:

As a child I saw my father:

(a) Frequently for play and companionship.
(b) Occasionally for play and companionship.
(c) Rarely for play and companionship.

The questionnaire is scored by a key designed to reflect the kinds of responses predicted by Roe for persons in occupations with major orientation towards persons.

Results:

The data shows no significant differences between the two groups. A check for possible influence of social desirability indicates that the less socially desirable responses are frequently used by both groups. In item 14 concerned with early interest in gadgets, thing vs. companionship significantly differentiates in the expected direction ($P < .01$).

Discussion:

Recalled early parental experiences do not distinguish the two groups. The science group is differentiated from the nursing group in a way consistent with Roe's categorization of science and technology as areas selected by those whose major orientation has been towards nonpersons.

HAGEN D.: "Careers and family atmospheres: an empirical tests of Roe's theory". J. counsel. Psychol., 1960, 7, 251-256.

Theoretical Orientation:

Roe predicts that certain kinds of family atmospheres orient the person to certain career groups (see P. 22) for details). These specific hypotheses encompass the broader assumption that certain groups of home environments orient people in the direction of careers which can be classed as "toward people" and "not toward people".

Hypothesis:

Refer to P.28 for statement of Roe's hypothesis.

Subjects:

Ss were drawn from 254 participants in Harvard Study of Adult Development commencing 1938 through 1942. Data is kept up to date by annual contact with result that voluminous life history data is available.

Method:

Remarks relevant to childhood are excerpted and rated independently by two judges. 34 cases are rejected because judges disagree. Subjects careers are classified in Roe's system. The Arts and Entertainment group is not represented. The Organisation group is omitted as Roe does not suggest a relevant family climate. Also the "loving atmosphere" category is omitted as Roe does not specify its influence on vocational choice.

Results:

Since Roe's theory is specific, a 100% "hit" rate between family atmosphere and selected career group is expected. Obtained results show considerable and significant departure of actual from expected "hit" rates. A second question is: Are the observed rates greater than one may expect by chance? Analysis of results shows that casual family atmosphere has a "hit" rate beyond chance and protecting atmosphere borders on significance. The significance of the "hit" rate for all categories is also evaluated and found to be not significant.

The author examines Roe's intermediate postulate about (1) demanding and protecting atmospheres (2) rejecting, neglecting and casual atmospheres, in relation to orientation towards people or not toward people. Again, results are not significant ($P < .95$).

The author concludes that Roe's scheme in its literal translation and specific application lacks validity.

Discussion:

The author brings these points to attention:

(1) Small numbers thus requiring relatively large fiducial limits for "hit" rates.

(2) Are careers for subjects misclassified? Rejects this possibility since ample data is available and rules for classification are clear.

(3) Is family atmosphere revealed in basic data and its summation by judges? Since recall is involved, the author admits the possibility of doubt. He suggests that sufficient differentiations among careers are not represented in Roe's work; that some groups are more homogeneous in their need patterns and opportunities for need satisfaction. There is need to examine more analytically the total home atmosphere, e.g., particular parent-child interaction and the child's response to the atmosphere rather than the atmosphere itself.

HALL R.C.: "Occupational group contrasts in terms of the differential aptitude tests: an application of multiple discriminant analysis" Educ psychol. Meas., 1957, 17, 556-567.

Theoretical Orientation:

This study is concerned with the problem of occupational classification of the counsellee. The usual method of the profile in which for each test separately high and low points are emphasised and points near the average ignored is inadequate. The counsellor needs to know the optimal combination of scores on all tests for the purpose of contrasting occupational and educational groups. A procedure to achieve this objective is multiple discriminant analysis

Hypothesis:

No theory generated hypotheses are stated. The study has two purposes (1) describe subjects in selected groups in the same set of objective test terms to determine the extent to which the groups are differentiated; and (2) to determine probability statements for group membership for future subjects taking the same tests.

Subjects:

267 males who took D.A.T. in 1947 (age range 7 - 2/12 to 17 - 6/12), followed up at approx. age 21 years. On the basis of Ginzberg's work commitment to choice is assumed for 21 year old subjects.

Method:

D.A.T. scores are analysed for five groups: (1) liberal arts college, N = 66; (2) skilled trades, N = 22; (3) clerks, N = 49; (4) mechanical, electrical and building trades, N = 59; (5) unskilled, N = 71.

Results:

Means and s.d's on each variate for each group suggest presence of some separation. Assessment of the extent of separation by discriminant analysis yields one discriminant accounting for 4/6 of group mean dispersion. Distributions of the eight test discriminant scores of individuals in each group show considerable overlapping, the greatest separation occurring between the liberal arts and unskilled groups. Clerks, salesmen and skilled trades cluster as a second group and the mechanical, electrical and building group cluster with the unskilled as a third group.

Two centour scores for each eight variate discriminant scores are calculated (centour scores indicate percent of a normally distributed population of discriminant scores which are farther from the mean for each group than the discriminant score specified (see summary of Tiedeman and Bryan study).

Discussion:

The author comments that the lumping together of mechanical, electrical and building tradesmen in one group increases group heterogeneity (this group has the greatest discriminant score dispersion). In future research they should be separated into two or three groups.

HAMMOND Marjorie: "Motives related to vocational choices of college freshmen". J. counsel. Psychol., 1956, 3, 257-261.

Theoretical Orientation:

Research and counselling experience suggest that young people know little about occupations, although 9/10 freshmen entering college state preferences with assurance. If choice is not based upon information, then it is presumably based on something of importance to the individual. Various theories, e.g., need and drive satisfaction, say that acceptance and rejection are related to basic personality organisation and attempts at need and drive satisfaction.

Alternatively, choice may be approached in terms of expectancies, e.g., security, expression, prestige, which are motivating. Such motivations, coupled with ignorance about requirements and duties, could be predictive of disappointment unless accompanied by necessary abilities and interests.

Hypothesis:

The study is concerned with the development of an instrument to assess such motivations and records the scores of various occupational choice groups.

Subjects and Methods:

Beginning with high school seniors and college freshmen, verbatim phrases about likes and dislikes and vocationally relevant attitudes are collected. From this pool, a check list is constructed: "Which of these aspects of these occupations appeal to you?", "Which of these expressions best describes this occupation?", "Which of these aspects would be important to you in deciding whether to enter this occupation?" "Which of these aspects of this occupation appeal to you least?", and is presented to students enrolled in dissimilar college majors. Finally, 70 items are presented to judges for sorting. This results in 12 cluster piles - economic security, personal security, economic status, prestige, independence, immaturity, perfectionism, practical, technical, scientific, persuasive and "do-good".

Further refinement of the items and scales is undertaken until four scales are determined:-

Factor A: materialistic, "get rich quick" - economic status need.

Factor B:	competitive. "be somebody" - personal status need
Factor C:	technical, "be right", security in detail and method - structure need.
Factor D:	humanitarian, "love people" - acceptance need.

Results:

To test the scale, vocational choices of 1,400 subjects are sorted into vocational areas and relationships between choices and upper quartile scales scores examined. Highest scores on Factor A are made by persons planning entry to business, art (presumably commercial), law and pharmacy. Persons choosing communications area, e.g., journalism, advertising, radio, show high scores on B vs. lower scores on C. Male subjects choosing engineering, the natural sciences and optometry score highest on C. Persons choosing social science applications score highest on D.

Discussion:

The results of the study are affected by subjects who may subsequently change area of specialisation.

HIMELSTEIN P. and BLASKOVICST L.: "Prediction of an intermediate criterion of combat effectiveness with a biographical inventory". J. appl. Psychol., 1960, 44, 166-168.

Theoretical Orientation:

If a person engages in activities judged to require risk and strategy, e.g., play poker, play hooky from school, play contact sports, etc.. he will develop tendencies that will lead him to be more effective in combat

Hypotheses:

1. ROTC cadets selected by the peers as "best for combat" will obtain higher scores on the Risk Scale than those selected as "least effective for combat".

2. ROTC cadets who select combat branches of the Army as their first choice for active duty assignment will obtain higher scores on the Risk Scale than those who select noncombat branches.

Subjects:

57 seniors enrolled in Army ROTC courses at the University of Arkansas in 1958.

Method:

The Risk Scale is the revised Torrance-Ziller Scale. Combat effectiveness is provided by a peer-nomination procedure. Subjects complete the Risk Scale, then approximately two weeks later nominate branch and then two months later peer nominations for combat effectiveness and leadership (best and poor leaders) are obtained.

Results:

Risk Scale correlates .41 with combat ratings and .37 with leadership ratings (both significant at .01 level). Ratings between combat and leadership correlate .87

Those selecting combat branches have a mean Risk Scale score of 26.2 compared with 22.2 for noncombat group (significant at .05 level).

Discussion:

The authors comment that the overall results are encouraging.

HOLLAND J.L.: "A personality inventory employing occupational titles" J. appl. Psychol.. 1958, 42, 336-342.

Theoretical Orientation:

Previous research reflects the relation of vocational interest to attitudes and personality and implies that a useful personality inventory may be constructed from occupational or interest test content. The subject, in responding to a list of occupational titles by indicating "interest" or "dislike" is:-

(1) reflecting his favourite or common mode of adjustment;

(2) expressing his motivation, knowledge of occupations, abilities and insight and understanding of himself;

(3) discriminating potentially satisfying and beneficial environments from potentially dissatisfying and unhealthy environments.

Research evidence (a) supports the view that different classes or groups of occupations furnish different kinds of gratifications or satisfactions and require different abilities, identifications, values and attitudes - hence, there is justification for grouping of occupations; (b) suggests that the total number of preferred occupationsis a function of a number of personality variables, e g. dependence, aggressiveness, mood, etc.,; and (c) indicates that inability to make discriminations among occupations reflects conflict and disorganized self-understanding.

Hypothesis:

No hypothesis. Purpose is to describe rationale and method of construction of H.V.P.I.

Method:

The scale is constructed in three forms. The first form comprises eight apriori scales derived from review of vocational interest and choice literature emphasising personality factors: (1) Physical Activity, (2) Intellectuality, (3) Responsibility, (4) Conformity, (5) Verbal Activity, (6) Emotionality, (7) Reality Orientation and (8) Acquiescence. Occupational titles are included which reflect the orientations of each scale, e.g., Physical Activity includes titles such as machinist, North Woods guide, forest ranger. Scales are scored by counting the number of "preferred" occupations in each scale. The second form incorporates a revision of the first, following internal consistency analysis plus six added scales, viz., Control, Aggressiveness, Mf, Status, Heterosexuality and Infrequency. All scales are inter-correlated and a cluster analysis performed to eliminate scales and clarify scale meanings. This results in 10 scales for the third form.

The third form follows internal consistency analysis for the 10 surviving scales using male and female freshmen subjects (N = 600). In its final form it contains (1) three response-set scales, viz., Question scale, i.e., number of items omitted, Infrequency scale and Acquiescence scale and (2) ten personality scales, viz., Physical Activity, Intellectuality, Responsibility, Conformity, Verbal Activity, Emotionality, Control, Aggressiveness, Masculinity - Femininity and Status.

The Status Scale is derived from three independent studies of occupational status. For a particular occupation to be a high status choice, it has to have high status in each of these three studies. The Mf scale is based upon comparative responses of male and female subjects. The Infrequency Scale consists of items rarely "liked" or "disliked" (25 in each case). High scores here represent unusual or unpopular choices, low scores the reverse. The Acquiescence Scale provides estimate of tendency to respond "appeal" or "like".

Reliability and validity data are provided.

HYMAN B.: "The relationship of social status and vocational interests". J. counsel. Psychol., 1956, 3, 12-16.

Theoretical Orientation:

Research suggests that social status is, for example, related to patterns of family life and direction of education development. If social status conditions to varying extents many environmental factors, it seems reasonable to expect that social status will have some influence on vocational interests.

Hypothesis:

The hypotheses are not formally stated. Two hypotheses are tested:-

(1) Differences in social status are significantly related to vocational interests.

(2) Differences in intelligence are significantly related to vocational interests.

Subjects:

147 male seniors from two secondary schools in Meriden, Connecticut.

Method:

The following data, previously accumulated, is used (1) Otis Mental ability scores (I.Q. range 89-128), parental occupation. Social status is based upon parental occupation, using Edwards classification of (1) Professionals (2) Proprietors, Managers, and Officials (3) Clerical and kindred workers (4) Skilled Workers and Foremen (5) Semiskilled Workers (6) Unskilled Workers. The Kuder Preference Record, Form B is used to obtain a measure of vocational interests since it focuses attention on the nature of the activity, not on its concimitants or outcomes.

Results:

Social status distribution of subjects is:-

Class 1	Professionals	...	8
Class 2	Proprietors, etc.	...	18
Class 3	Clerical and kindred	...	22

Class 4	Skilled Workers and Foremen	...	32
Class 5	Semiskilled Workers	...	48
Class 6	Unskilled Workers	...	19

The Kuder results are presented in three different tables:

(1) Social status by mean interest area scores
(2) Intelligence by mean interest area scores. (Intelligence scores are dichotomised normal (89-109) and superior 110-128).)
(3) Social status relative to intelligence by mean interest area scores.

For this third table social status is expressed as (1) Upper (classes 1 and 2); Middle (classes 3 and 4); and Lower (classes 5 and 6). The interest data is classified upper normal, upper superior, middle normal, middle superior, lower normal, lower superior.

The data of table 1 do not support hypothesis 1, i.e., social status is not significantly related to vocational interests. Table 2 lends very limited support to hypothesis 2 - three interest areas, viz., computational, scientific and artistic are significantly related to intelligence, the first two areas having significantly higher mean scores for the superior group and the third area having significantly higher mean score for the normal group. Table 3 data shows that for 6/9 interest areas, when either social status or intelligence is not allowed to obscure the relationship of the other to interest, the other factor is related to type of interest. The six areas are mechanical, scientific, persuasive, artisitic, literary, social service.

The criterion for scoring an item is that supervisors in a given nursing school agree in their responses. Where disagreement occurs, the item represents expectations to which the student cannot be reasonably held and is accordingly not scored.

Six juxtapositions of the four questionnaires are reported:-

(1) knowledge of training programme
(2) knowledge of activities of a nurse
(3) attributes of the ideal nursing student
(4) knowledge of rights and obligations
(5) conceptions of self and superior's conception of attributes of the ideal nursing student
(6) conceptions of self and own conception of attributes of the ideal nursing student.

For each of the above six juxtapositions three separate scores are extracted, giving 18 scores to be correlated with perseveration (based upon retention in training after six months) for each of the seven schools.

Results:

Of 126 correlations 13 only are significant. 90 (including the 13 significant) are in the prediction direction.

Discussion:

The results offer very limited support to the author's theory. This study is one of the few well designed studies of the self concept. The independent variable is clearly defined as in the dependent variable, viz., perseveration in training.

KINNANE J.F. and PABLE M.W.: "Family background and work value orientation". J. counsel. Psychol., 1962, 9, 320-325.

Theoretical Orientation:

There is a dearth of previous research in this area but Super, Roe and others have suggested that the family may be thought of as determining vocational development through its economic interests, affiliations and values. Values tend to be family derived. Socio-economic status has been studied in relation to values but other factors, e.g., role models, work and play habits, warmth of family relationships, cultural stimulation and status cravings may be relevant.

Hypothesis:

(1) *S.E.M. work values will be positively related to the degree of materialistic atmosphere in the home.

(2) *A.P. work values will be positively related to the upward social mobility of the family.

(3) *S.A. work values will be positively related to a combination of family influences - cultural stimulation and family cohesiveness.

(4) *W.C. & A. work values will be positively related to family cohesiveness.

(5) *H.C. work values will be positively related to the cultural stimulation in the home.

(6) *I.V. work values will be negatively related to the degree of adolescent independence.

Subjects:

121 11th grade white boys from two high schools, aged 16-18. Intellectually, educationally and socially, subjects were representative of high school population (subjective assessment, not sampled).

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*S.E.M. = Security-Economic-Material
*A.P. = Achievement-Prestige
*S.A. = Social Artistic
*W.C. & A. = Work Conditions and Associates
*I.V. = Independence Variety
*H.C. = Heuristic-Creative

Method:

Two instruments are used being modifications of C.P.S. instruments:

(1) Biographical Inventory, altered to include a materialistic atmosphere scale in place of socio-economic scale.

(2) Lengthened version of Super's Work Values Scale (89 items as opposed to 30 in the original).

Results:

Correlations are as follows:-

Family Variables	Work Values					
	S.E.M.*	S.A.*	W.C. & A.	H.C.	A.P.	I.V.
Materialistic	.41**	.10	.29**	.08	.06	.14
Cultural	-.14	.21*	.06	.35**	.16	.08
Cohesiveness	.14	.17	.21*	.20	.05	.07
Mobility	.08	.17	.11	.17	.17	.14
Independence	.00	.00	-.06	-.10	-.10	-.18*

* $P < .05$ R = .26 (see hypothesis 3)
**$P < .01$ S.A. — cult. cohes. ( )

Partialling of I.Q. has negligible effect on results. Comparison of work values scale means for "academic" and "general" programme shows significantly higher mean for the former group on H.C. scale (an expected result).

Discussion:

Commenting on the results, the authors mention three points:

(1) possible unreliability of the Work Values Scale

(2) complexity of determinants of work values

(3) the problem of adequately assessing family background by a biographical inventory

KINNANE J.F. and SUZIEDELIS A.: "Work value orientation and inventoried interests". J. counsel. Psychol., 1962, 9, 144-148.

Theoretical Orientation:

Occupational interests reflect value orientations, needs and motivations. Value orientation appears to be closely linked with vocational choice and development in two ways (1) in the compromise process of choice (2) by being molded by work experience itself. Studies relating values to inventoried interests have not been more definitive probably because of failure to define values in the vocabulary of the world of work.

Any juxtaposition of work values and interests is meaningful only if the two are conceptually and operationally distinct. Items in interest inventories are largely molecular, descriptive of specific activities and objects and call for preferential responses to structured and concrete stimuli. Items in a value scale must be molar, motivational, directive, cognitive-affective, basic and pervasive.

Hypothesis:

When values are translated into the vocabulary of work, clearer and more precise relationships can be demonstrated between values and the patterning of inventoried interests.

Subjects:

191 college freshman and sophomore males.

Method:

S.V.I.B. and a modification of Super's Work Values Inventory. Factor analysis of Super's inventory located six relatively independent factors: (1) security-economic-material (2) social-artistic (3) work conditions and associates (4) heuristic-creative (5) achievement-prestige (6) independence-variety.

Each item in each scale is rated 1-4 according to its importance in deciding about a job. The rating is multiplied by a weight based upon the items factor loading and the products summed for all items in each scale. A "high" and "low" group is selected from scores delineating the top and bottom quarters of the distribution.

Interest patterning is obtained by count of A's and B+'s on each of seven occupational groupings of the S. V. I. B. for both "high" and "low" groups on each value scale. The hypothesis is tested by comparison of obtained proportions of A's and B+'s with the mean proportions expected by chance.

The seven occupation groupings are (1) biological sciences (2) physical sciences (3) technical (4) social service (5) business detail (6) business contact (7) literary.

Results:

Generally the hypothesis (which is not precisely formulated) is supported. Thus, for example, orientation toward security-economic=material values is significantly and positively associated with interest patterning in physical science, technical and business detail and inversely related to biological sciences, social service and literary. High scores on the social artisitic scale are associated with interests in social service, business contact and literary and high scores on the heuristic-creative scale with interest patterning in the sciences and technical occupations indicating a clear differentiation of interest patterning. The other scales show no or few significant relationships.

Discussion:

The results suggest that the more extrinsic values are to the nature of occupational groups the less important they are in determining the development of preferences prior to entry. The security -economic-material scale is an exception. Extrinsic factors such as working conditions and associates may become more relevant after exposure to the realities of work. Thus, in the pre-entry stage only values intrinsic to the nature of an occupation are fruitful. Values extrinsic to the nature of an occupation may be more susceptible to modification.

McDANIEL E.D., Halter A.N. and HARTFORD D.L.: "Grade utility: a new non cognitive factor in academic prediction". Educ. psychol. meas., 1961, 21, 621-627.

Theoretical Orientation:

This study is planned against a background of "low grade ore" results in the field of academic achievement prediction. Von Newman and Morgenstern suggest that it is possible to measure the utility to any person of any good by examining his preferences in situations where a given good exists in combination with alternative goods. More specifically an estimate of utility of any event may be obtained by examination of preferences, when the person must choose between securing a known gain with certainty or enter a lottery situation in which he has a given chance of securing a desired gain.

It is assumed that college students will place variable values on obtaining a high grade point average.

Hypothesis:

Students with high utilities and marginal utilities will, with ability controlled, make a higher grade point average than students with lower indices of utility.

Subjects:

104 college freshmen.

Method:

Questionnaires offering the alternative of taking a certain grade or gambling for a higher one are administered to the subjects. Subjects also take an intelligence test.

The offer presented in the questionnaire is in the form of:-

Take D for certain	OR	pick from a hat containing various combinations of C's and F's.

Similar offers are made for C and B with alternatives combining B's and D's, B's and B's, A's and F's, A's and D's, etc.

From this data utility values for grades are calculated and plotted as curves. A high utility value (and hence a high curve) indicates willingness to enter the gamble early and take great risks for the prospect of higher grade. Also a relatively steep slope suggests greater willingness to gamble as rewards are elevated.

Results:

The results do not support the hypothesis. Ability and criterion of achievement correlate r = 0.683. Multiple correlation between ability, utility and criterion is).718, which is encouraging and for marginal utilities, ability and criterion 0.689, which is disappointing. The effect of slope and height in combination on criterion with ability constant is not significant.

Discussion:

The authors comment that there are still many unanswered problems before a usable theory of utility can be applied to the area of academic prediction.

MAHONE C.H.: "Fear of failure and unrealistic vocational aspiration". J. abnorm. soc. Psychol., 1960, 60, 253-261.

Theoretical Orientation:

This study is conducted within the general framework of the McClelland, Atkinson and other's studies of the achievement motive. Fear of failure which is defined as a motivational disposition to be anxiously concerned about avoiding failure is assessed by a self report measure of achievement related anxiety or inferred from low n ach. scores on a thematic apperception test of achievement imagery. The thesis of the study is that subjects who are fearful of failure tend to be unrealistic in their vocational choice.

Realism is related to interests and ability. A realistic choice occurs when the person chooses an occupation with ability demands commensurate with his own and interest pattern congruent with that of most in his choisen field. Previous research suggests that persons with relatively high fear of failure tend to avoid achievement related information which for this study is regarded as lack of information about interest satisfaction to be found in work and information about his own ability and that required for his choice of occupation. Atkinson's model for prediction of level of aspiration from relative strengths of fear of failure and need for achievement is adapted to the present study by regarding level of ability required by a choice as an index of level of aspiration. Choice of an occupation which the person feels very confident about attaining constitutes underaspiration and one very difficult to attain overaspiration. In Atkinson's model the fearful person tends to over or under aspire avoiding the intermediate range of the risk continuum and in the present context is choosing the least probable range of achievement.

Hypothesis:

(1) A person fearful of failure tends to choose a vocation that is unrealistic in terms of the discrepancy between his own ability and the ability judged suitable for the occupation to which he aspires.

(2) A person fearful of failure tends to choose a vocation that is unrealistic in terms of the discrepancy between his own perceived ability and the level of ability that he perceives as being suitable for the occupation to which he aspires.

(3) A person fearful of failure tends to be inaccurate in his estimation of his ability.

(4) A person fearful of failure tends to choose a vocation that reflects a pattern of interests discrepant with his own.

Subjects:

135 male college students, University of Michigan.

Method:

Subjects complete:-

(1) Vocational information questionnaire from which the following items are extracted:

(a) vocational objective (b) estimate of ability required for each of a number of listed occupations
(c) estimate of ability relative to fellow students
(d) vocational choice if ability not a limiting factor
(e) which occupation in given list resembles most closely his own choice

In fact the list contains vocational choices of subjects or ones closely resembling them. Each S's estimate of ability required for this occupation constitutes the measure of estimated ability required for own choice.

(2) The n achievement test (measure of postive achievement motivation) scored for achievement, affiliation and power motives.

(3) Alpert's Debilitating Anxiety Scale (measure awareness of extent to which anxiety interferes with efficiency of performance in achievement test situations).

(4) A. C. E. test of general ability and S. V. I. B.

Results:

Hypothesis 1. Ability judged suitable for various occupations is determined by agreement of expert opinion. Judgments about subjects are made on relevant data about ability and choice by experts who rate subjects as (1) probably over aspiring (2) perhaps over aspring (3) probably realistic (4) perhaps under aspiring (5) probably under aspiring and additionally designate their ratings (1) very confident (2) moderately confident (3) moderately doubtful (4) very doubtful.

A highly significant difference in the expected direction in realistic vs unrealistic choices is found for those high on n ach. and low on anxiety and low on n ach. and high anxiety

Confining the analysis to cases where ratings are (1) very confident (2) moderately confident sharpened the differences in the expected direction.

Hypothesis 2. Subjective goal discrepancy is the difference between the S's estimate of his own ability ("Irrespective of your own grade point average, where do you think you stand in relation to your fellow students in general ability") and his estimate of ability required for his vocational objective ("What percentage of undergraduates at University of Michigan do you feel have sufficient general ability to attain the following occupational goals, providing they were motivated to do so"). Thus the discrepancy score becomes percentage of the students with ability higher than S minus the perceived percentage with sufficient ability to attain S's goal. e.g., If S estimates his ability such that 50% exceed him and he estimates that 10% have the ability to attain his goal, his score is 50 - 10 = 40, which means that his own ability is seen as inferior to that required by the job.

Two analyses are provided (1) one on the assumption that estimates of average ability are required (2) the other on the assumption that estimates of minimum ability are required. For both analyses the hypothesis is confirmed.

Hypothesis 3. A discrepancy score based on estimated and actual percentile ranks is calculated. A minus score indicated under-estimation; a plus score overestimation. The hypothesis is confirmed.

Hypothesis 4. Judges indicated primary and secondary interest patterns expected on S.V.I.B. for S's choice. On basis of pattern analysis of actual scores S's are divided into (1) discrepant (2) non discrepant groups and percentages analysed in terms of fear of failure measures. The hypothesis is confirmed.

Discussion:

It is necessary to refer to the journal article for full details of results. For the various criteria of realism, viz., clinical judgments, subjective goal discrepancy, inaccuracy in estimates of ability, discrepancy between interest pattern and vocational aspiration, data is presented:-

1. by n ach high and low

2. anxiety high and low

3. (a) high n ach. high anxiety
   (b) high n ach. low anxiety
   (c) low n ach high anxiety
   (d) low n ach. low anxiety

It is with 3 that hypotheses are consistently confirmed and less frequently on 1 and 2.

This is an interesting study because it flows from fairly rigorous theorizing. One may dispute some of the indices or the basic concept of realistic choice.

MEYER H.H., WALKER W.B. and LITWIN G.H.: "Motive patterns and risk preferences associated with entrepreneurship" J. abnorm. soc. Psychol., 1961. 63. 570-574.

Theoretical Orientation:

This study is conceived within the framework of "need for achievement" research (n ach.) inspired by McClelland. Atkinson and others Atkinson's theoretical model showing that individual behaviour in a situation of competitive achievement involving risk can be accounted for by the interaction of the motive to achieve success and the motive to avoid failure suggests that the person strongly motivated by the former is most attracted to a risk situation where the chances of success are approximately 50-50 whereas the person primarily motivated by the latter finds the same risk situation (50-50 success) most unattractive. McClelland argues that high achievement motivation should be associated with successful entrepreneurship and has demonstrated that certain characteristics associated with the entrepreneurial role, e.g., willingness to take risks and sense of responsibility characterize the person high in achievement motivation

Hypothesis:

This is an exploratory study and is one of the first attempts in an industrial setting to determine the relationship between measured motive patterns and adjustment to job roles There are three hypotheses:-

(1) Persons in jobs with definite entrepreneurial characteristics will score higher on a "need for achievement" measure than persons whose jobs are non entrepreneurial.

(2) In a risky situation. entrepreneurs will show preference for risks with odds of success near 50-50.

(3) Motive scores will be significantly related to attitudes towards the entrepreneurial aspects of the job.

Subjects:

Two groups (N = 31 in eachcase) selected to represent the entrepreneurial and non-entrepreneurial functions

Method:

Criteria for entrepreneurial function are:-

(1) responsibility for initiating decisions;

(2) individual responsibility for decisions and their effects; and

(3) objective feedback of data indicating success of decisions. (3) means that the job involves more risk and challenge since error is more likely to be observed.

Two groups (1) managers (2) specialists, representing the two functions are used.

Subjects complete:

(1) risk preference questionnaire (pairs of betting choices)

(2) six thematic apperception pictures specifically selected for use with businessmen (scored for n achievement, n affiliation and n power).

Subjects are interviewed for assessment of attitudes towards the entrepreneurial function. Subjects also indicate "level of aspiration" in terms of ultimate position or status to which each is striving. Ratings are also given by managers two levels above the subjects on the degree to which they demonstrate the achievement drive, e.g., how strongly motivated on the job, degree of identification with the job, how hard does he work at it, degree of pride, striving to improve, etc.

Results:

The two groups differ significantly in the expected direction on n achievement (not for other motives) and managers significantly prefer intermediate odds as hypothesized. Motive scores are not significantly related to interviewers assessments of attitudes towards the entrepreneurial functions. A number of other results is reported of which the absence of any significant relation between the risk preferences and n achievement is of considerable importance to the theory.

Discussion:

The results confirm the first two hypotheses but not at as high a level of significance as might be desirable. The absence of support for hypothesis 3 may be due to the small within groups variances. Additionally the shortcomings of the measures may also be relevant. The absence of correlation between the two measures (same results were also reported by Atkinson) may reflect the fact that risk taking behaviour as assessed is a better indicator of fear of failure motivation than of success oriented motivation. Similarly other research evidence suggests that high fear of failure is not consistently associated with low n achievement.

MIERZWA J.A.: "Comparison of systems of data for predicting career choice". Personnel guid. J., 1963, XLII, 29-34.

Theoretical Orientation:

This report forms part of the Harvard Scientific Careers Study. It utilises the developmental framework emphasised by Super and is concerned with "determinants" of career choice and their interaction, i.e., factors theoretically or through verified speculation said to influence choice.

Hypothesis:

There are no specific hypotheses. The research has three major aspects: use of a large number of variables, reduction of complex data and use of systems of data. System, in this context, is analogous to profile or pattern analysis wherein all variables are considered simultaneously and in relationship to each other. The purpose is to determine the effectiveness of various systems of data for predicting career choice, i.e., whether career choice is a function of any one entire system of data to a greater degree than another.

Subjects:

192 11th grade subjects in the Harvard Scientific Careers Study above the 50th centile on intelligence tests and enrolled in a college preparatory curriculum. The subjects are assigned to two groups: (1) science (2) non science on the basis of stated career goal. The procedure is repeated in grade 13.

Method:

Five representative systems of data are used:

(1) Ability: Cal. Test of Mental Maturity, Sequential Tests of Educ. Development.

(2) Interest: Kuder Preference Record-Vocational

(3) Temperament: Guilford-Zimmerman Temperament Survey.

(4) Personality: Individual Rorschach Tests.

The statistical model is the multiple discriminant analysis (see W.W. Cooley) and is employed to determine: (1) rankings of the determinants (ranks are based upon probability values) (2) the number of correct classifications made by each system with regard to whether an individual will be in the science or non science group (3) rankings of combinations of systems of data.

Results:

(1) For both 11th and 13th grade data the systems rankings are:

Interest	1
Ability	2.5
Environment	2.5
Temperament	4
Personality	5

(2) The ability, temperament and environment systems do not differ significantly in their capacity to classify subjects. The interest system results in 22 more "hits" than the temperament system ($P < .01$).

(3) The temperament systems adds little to the other three systems. The interest system adds most (0.569 to 0.665; $P < .0005$). The ranking of the systems following this analysis is:-

Interest	1
Environment	2
Ability	3
Temperament	4

Personality is not included in this analysis.

(4) The science - non science groups show little change from 11th to 13th grade.

Discussion:

The author comments on several limiting factors: males only; pre-selection with regard to intelligence and education; age and career goal homogeneity. While the study establishes a hierarchy of systems this may in part be a function of the particular tests used. Support is given to the concept of multi-determinants of career choice. For counselling, the utility of the "broad" career area with subsequent further specification is indicated. The author also refers to more appropriate data supplied by discriminant function data for guidance/counselling purposes. (See F.E. Dunn's article - Comment by P. Dressel).

Support for the use of stated career goal as the basis of group membership is provided by (1) selection of appropriate high school curriculum (2) stability of choices between 11th and 13th grades (72% remained in their respective criterion groups in this period.

MORRISON R.L.: "Self concept implementation in occupational choices". J. counsel. Psychol., 1962, 9, 255-260.

Theoretical Orientation:

Super postulates that occupational choices are best understood from the point of view of self concept implementation through occupational roles. The self concept approach allows for the influence of factors marginal to awareness; e.g., feelings and attitudes which enter into decision making in subtle ways which are frequently not consciously recognised. This study explores the possibilities of adapting Q methodology toward the solution of the problem that the self concept and occupational role perceptions, being both essentially subjective, are not accessible to standardised measuring instruments.

Hypothesis:

(1) Perceptions by nurses of self and of a nurse will be more similar than their perceptions of self and a teacher.

(2) Greater concordance of self and own occupation perceptions (by Q sorts) is associated with occupational identifications of long standing.

(3) Degree of self-own occupation concordance is associated positively with degree of commitment to the occupation. (This hypothesis is not explicity stated by the author).

Subjects:

44 nurses and 43 trainee teachers, both groups equidistant in time from presumed date of entry into profession.

Method:

Subjects perform Q sorts, using same statements, for self, own occupation, and other than own occupation. 21 nurses and 13 teacher trainees reverse the order of the second sort (the first sort being for self) as a check for possible perseveration effects.

Results:

The discrepancy scores for self-own occupation and self-other than own occupation for both groups support the first hypothesis. There is evidence to suggest that perseveration effects, i.e., in the regular order group increases the congruence of self-other occupation perception but this does not nullify support of hypothesis 1. Those choosing their occupation prior to high school do not differ signficantly in self-own occupation congruence from those choosing their occupation during or after high school. Thus hypothesis 2 is not supported. Degree of commitment is significantly related to self-own occupation concordance.

MERWIN J.C. and DI VESTA F.J.: "A study of need theory and career choice". J. counsel. Psychol., 1959, 6, 302-308.

Theoretical Orientation:

Favourable attitudes result from perceptions that the attitude object facilitates need satisfaction; unfavourable attitudes result from perceptions that the attitude object hinders or blocks need satisfaction. Thus, it might be expected that degree of acceptance or rejection of a career depends upon perception that the career facilitates or hinders satisfaction of important needs.

Hypothesis:

The degree of acceptance or rejection of a career depends upon perception that the career facilitates or hinders important need satisfaction.

Subjects:

218 Syracuse University freshmen of which 67 indicated preference for teaching.

Method:

This study is section of a broader study of the effect of need oriented communication upon attitude structure and change. In terms of the rationale, three measures are required (1) attitude towards a career, in this study teaching (2) need measures (3) measure of extent to which teaching facilitated or hindered satisfaction of the measured needs.

In the main study data is collected on three separate occasions:-

(1) as part of freshman testing programme
    (a) measure of need strength
    (b) attitude towards teaching
    (c) perception of teaching as instrumental to need satisfaction

(2) as part of an educational radio programme study in which the subjects are divided randomly into three groups. At this juncture a second need measure is taken together with the attitude scale. This testing is done four months after the first.

(3) the three groups are exposed to three different forms of communication:-

Group 1 - teaching is good because it satisfies achievement need

Group 2 - teaching is good because it does not involve satisfaction of achievement need

Group 3 - exposed to an irrelevant communication

At the conclusion the subjects take the perceived instrumentality instrument and the attitude scale.

Results:

Only results relevant to the hypothesis are reported in this summary.

(1) On the four needs measured, viz., achievement, affiliation, dominance and exhibition, the teaching group is significantly higher on affiliation and the non teaching group on dominance and achievement.

(2) The teaching group perceives teaching as having more potential for satisfying the four needs than does the non teaching group. The non teaching group has a strong achievement need and perceives teaching as not satisfying achievement need. The teaching group has a more favourable attitude to teaching than the other group.

The authors conclude that the teaching group (1) has a more favourable attitude towards teaching as a career (establishes validity of the attitude scale); (2) regards affiliation as an important need; (3) perceives teachin g as more potential of need satisfaction, and significantly so in the case of achievement and affiliation. The non teaching group has (1) a less favourable attitude towards teaching (2) regards dominance and achievement as important needs (3) perceives teaching as less potential of need satisfaction and significantly so in the case of achievement.

The authors regard the results as supporting the rationale underlying the hypothesis.

NORRELL G. and GRATER H.: "Interest awareness as an aspect of self awareness". J. counsel. Psychol., 1960, 7, 289-292.

Theoretical Orientation:

Choice of an occupation or indication of an interest in an occupation is taken as a significant reflection of how the individual perceives himself, of what kind of a person he feels himself to be. The self concept is not necessarily an accurate picture of self. Distortions and limitations result from particular needs and manifest themselves in many ways, not the least of which may be picture of self in occupational roles. It might be expected that the individual whose stated vocational interests are not commensurate with an objective measure of vocational interests should have needs limiting self awareness. An inappropriate vocational objective is one symptom of distortion of self concept.

Hypothesis:

Ss who can make accurate predictions of interests on S.V.I.B. will differ from those unable to make such accurate predictions S.V.I.B. on those scales of the E.P.P.S. which, in opinion of trained judges, measure needs which restrict self-awareness.

Subjects:

53 male sophomores, Michigan State University, enrolled in a no-preference; i.e., no major field chosen, category.

Method:

Tests used are E.P.P.S. and S.V.I.B. Ss also completed S.V.I.B. profile sheet and asked to rate interests on each of the Strong scales. On the basis of congruence of predicted and measured interest Ss were divided into a high awareness (11) and a low awareness group (32) thus giving measure of self awareness. The 15 needs of the E.P.P.S. are rated by six judges (5/6 agreement required) on the basis that the high awareness group will have a high or low score on each need scale. 12 needs are included in terms of the agreement criterion, the predicted direction of scale scores being high or low for the high awareness group. The scales and predicted directions are: achievement (h), deference (1), order (1), antonomy (h), affiliation (h), intraception (h), succorance (1), dominance (h), abasement (1), nurturance (h), change (h), heterosexuality. (h).

Results:

Mean score differences for the high and low awareness groups are all in the predicted direction ($P < .001$) but in terms of individual needs four only are significant; viz., order ($P < .05$), succorance ($P < .001$), change and heterosexuality (both $P < .01$). The authors conclude that the hypothesis is confirmed.

Discussion:

The significant needs are usually associated with lack of capacity to use one's resources. Adjustment solutions are sought in dependency relationships in trying to achieve certainty and inflexibility in the environment. The authors admit two limitations; viz., non representativeness of sample and the uncontrolled relationship between needs and exploration and perception of reality; i.e., Ss who were poor predictors may have been so because of lack of or inaccurate occupational knowledge.

NACHMANN B.: "Childhood experience and vocational choice in law, dentistry and social work". J. counsel. Psychol., 1960, 7, 243-250.

Theoretical Orientation:

Different occupations afford different opportunities for the expression of impulses, for the utilisation of defenses, and for the organising of one's dealings with the world. Occupational groups do vary from one another in important personality characteristics, despite the modifying and perhaps sometimes obliterating circumstances that all men have basically the same impulses and that many occupations can be bent to serve many aims. The entire range of occupations can be described in terms of the major personality dimensions. Many personality oriented studies of research takes childhood experience as the basis for occupational group differentiation.

Hypothesis:

There are 13 separate hypotheses which are not reproduced here. Fundamentally, they are concerned with establishing whether one can correctly predict ways in which early experience and parental backgrounds of different professional groups will vary.

Subjects:

Three groups of male students (20 in each group) in schools of law, dentistry and social work at University of Michigan, all advanced in training. Subjects are volunteers who offer clear commitment to profession as a lifetime goal and profess satisfaction with choice. Those indicating salary, status, etc., as basis for choice are omitted. Possible atypicality of volunteers is checked with faculty members.

Method:

Based upon (1) what people in the occupations say about themselves (2) what others say about them (3) what one may observe of their work, the author presents job descriptions in behavioural terms of the three professions. She then formulates hypotheses in terms of childhood experience which will, if confirmed, account for the behavioural patterns in the three groups. Biographical information is obtained by tape recorded interview, the material being subsequently coded with regard to the hypotheses. For each hypothesis, a number of tests of significance is necessary; e.g., hypothesis 1 which reads: "In the childhood of the lawyer and the dentist, the father or the father-substitute was a strong, dominant clearly masculine figure, while in the childhood of the social worker either there was no father, or he was weak and inadequate"; there are seven tests of significance.

Results:

Results are not reproduced here in detail. Findings are predominantly positive and permit retention of essentially the same picture of the childhood backgrounds of each group as originally hypothesized.

O'CONNOR J.P. and KINNANE J.F.: "A factor analysis of work values". J. counsel. Psychol., 1961, 8, 263-267.

Theoretical Orientation:

This study is concerned with (1) identification of the parameters of work values and (2) comparison of these parameters with formulations of Ginzberg and Super. Ginzberg proposes three classifications of work values; (a) related to work itself, i.e., intrinsic (b) related to returns of work, e.g., money, prestige (c) concomitants of work, e.g., associates, particular environment. Super defines 15 work values: social, theory, art, mastery, economic-material, creativity, planning-supervision, variety, independence, conditions of work, associates, boss, security, prestige, way of life. These 15 values were originally classified under (1) work activity, (2) concomitants and (3) outcomes. Two and three were subsequently combined under rewards giving an intrinsic-extrinsic work orientation continuum running from work activity to rewards.

Subjects:

191 undergraduates, Catholic University of America.

Method:

Super's Work Values inventory is used.

Results:

Six factors are identified: (A) Security-Economic-Material (B) Social-Artistic (C) Work Conditions and Associates (D) Heuristic-Creative (E) Achievement-Prestige (F) Independence-Variety. No second order factors are present. The correlations between the primary factors suggest that Ginzberg's classification is too broad and Super's too discrete.

Discussion:

The authors conclude that their study points to the need for further empirical determination of the groupings of work values and the construction of instruments to measure them to improve understanding of the nature of vocational adjustment.

O'HARA R.P. and TIEDEMAN D.V.: "Vocational self-concept in adolescence". J. counsel. Psychol., 1959, 6, 292-301.

Theoretical Orientation:

Self and identity are relevant to motivation of occupational choice. While Super emphasises the centrality of the self concept he questions its merit because of difficulties in making the term operational. The authors define self concept as an individual's evaluation of himself and propose its assessment through congruence of self and measured estimates of certain vocationally relevant attributes.

Hypothesis:

Within the context of congruity of self and test estimates of the attributes (1) aptitude (2) interests (3) social class (4) values (5) work values, the authors test the hypothesis that:-

(1) self concepts in these areas are clarified as boys pass through grades 9 to 12

(2) there are stages in the development of occupational choice in the same period.

Subjects:

1021 Catholic High School boys in the senior, junior, sophomore and freshmen grades.

Method:

The subjects are given 5 scales of the D.A.T., 10 scales of the Kuder (Form CH), Gough's Home Index, a modification of Allport-Vernon Scale of Values and Super's Work Values inventory. The data is analysed by grade, not age for two reasons (1) administrative convenience (2) the belief that clarification of self knowledge is a function of curriculum more than age. Relationship between self and tested estimates is expressed in the form of correlation coefficients for each grade.

Results:

Graphical representation of the resultant correlation coefficients by grade shows increasing congruence of self and tested estimates in 4/5 of the attributes (social class shows no increase with grade). For the 9th to 11th grades the order in the relationship between the two estimates (highest to lowest) is interests, work values general values aptitudes and social class. By the 12th grade aptitudes surpasses general values. The data supports the hypothesis of increasing clarification of self concepts with grade in all areas except social class.

Working within the criteria of discreteness, dominance and irreversibility suggested by Ginzberg's study the authors turn to the second hypothesis In terms of discreteness, evidence is presented for an interest stage terminal at grade 10 and a work values stage becoming differentiated by grade 12 Dominance is given a special meaning viz., ability to estimate standing on the attributes and the evidence here clearly supports interests up to grade 12 when it is tied with work values. With the exception of social class there is no evidence for reversibility Thus, the data suggest (1) an interest stage and (2) a work value stage, the latter undergoing a secondary phase at grade 12.

ROE A.: "A psychological study of eminent biologists". Psychol. Monogr. 1951 65. 1-68. Whole No 331.

Theoretical Orientation:

This study is concerned with the relationship of personality to vocational choice and success, success being defined as "eminence in research" as judged by a man's peers. Since it is a pioneer study, there is no expectation that a full solution to such a complex problem will be achieved. The method is observational and orientation is to find out as much as possible about a few subjects rather than a little about a large number.

Hypothesis:

There is no theory generated hypothesis. The aim is to determine whether there are any patterns in personality or life history which differentiate between the different groups of scientists to be studied (see other summaries) or which differentiates them from the population at large. Thus, the nature of relationships (if any), points at which an attack can be made and the tools to use are the objectives of the study.

Subjects:

20 eminent biologists (American born, aged 60 years and under and actively engaged in research), representing fields of specialization as follows:-

3 -	Anatomy and Physiology
5 -	Botany (incl. plant physiology and cytology)
4 -	Genetics: plant materials
4 -	Genetics: animal materials
4 -	Biochemistry and Bacteriology

The 20 subjects are selected by a group of peers who themselves represent specializations in biology. They rate the work of the subjects as "first rate", "excellent but not first rate" or "not suitable". The original list (number not specified) is obtained from membership in the National Academy of Sciences and the American Philosophical Society. The rating process reduced the number to 30, then to 23 by elimination of certain age groupings. 20 agreed to participate in the study.

Method:

Data is collected in three ways in terms of the requirement that a broad approach is desirable:-

(1) Verbatim life history.

(2) A serious study of each subject's work, discussing the sequence of development and the factors contributing to it.

(3) Certain clinical instruments, viz., T.A.T., Rorschach, and a specially prepared Verbal-Spatial-Mathematical Test (E.T.S.).

Roe recognises certain deficiencies in design, e.g., control group, the absence of a group of least eminence for comparison purposes. Group Rorschach results for university faculties in biology are given. These subjects (N = 94) are also "successful" in their field.

Results:

Detail results are not provided in this summary (refer to Monograph). Some of the main results are given below:-

(1) parental family backgrounds are generally superior with respect to occupational and educational level;

(2) there is evidence of lack of warmth in many of parental homes;

(3) there is high (40%) incidence of death, divorce, serious illness among parents;

(4) there is a fairly consistent pattern of psychosocial development, e.g., intellectualisation of interests diverse with respect to age, late development of interest in opposite sex, disinterest in most social contacts.

(5) an early interest in natural history is characteristic of about 50% of group; discovery of possibility of doing research on their own is a specific experience acting as a major factor in subsequent vocational development; persistence and intensity in devotion to work to an outstanding degree is a feature of all the subjects.

(6) there is a wide range of scores on V.S.M. Test: Rorschach results suggest stubborness, persistence, little interest in interpersonal relations; T.A.T. results confirm case history conclusions about psychosexual development and indicate unwillingness to go beyond the data presented, a preference for concrete realities and a general distaste for the imaginery. Most are conventional with a strong sense of responsibility.

(7) comparison with the Group Rorschach results confirms findings of the main group with the exception that the eminent group show a better balance in intellectual and emotional control.

ROE A.: "A psychological study of eminent psychologists and anthropologists, and a comparison with biological and physical scientists". Psychol. Mongr., 1953, 67, 1-55. Whole No. 352.

Theoretical Orientation and Hypothesis:

Refer to study of eminent biologists.

Subjects:

14 eminent psychologists (American born, aged 60 years and under and actively engaged in research), representing fields of specialization as follows:-

10	-	experimentalists
4	-	clinical, social, developmental, testing

Selection of subjects is similar to that used with the physical scientists. 8 eminent anthropologists as above, representing fields of specialization as follows:-

2	-	physical anthropologists
2	-	archaeologists
4	-	cultural anthropologists

Method:

Similar to biologists study

Results:

Brief statement of results is given here. Refer to monograph for details.

(1) Average age of psychologists is 47 years and anthropologists 49 years;

(2) Majority come from lower to middle class backgrounds, the anthropologists having early feelings of personal or family superiority on a social or intellectual basis;

(3) Parental patterns of overprotection and firm control are common with strong rebelliousness by the subject.

(4) V.S.M. results show significant differences in favour of the psychologists on Spatial and Mathematical but compared with other scientists,

social scientists' results are not significantly different; T.A.T. results indicate relatively long stories with a fairly common theme of helplessness in the face of severe problems, considerable dependence on parent figures with components of unhappiness and guilt, strong concern with interpersonal relations and marked tendency towards unconventionality; Rorschach results suggest productivity, rather uncritical, and haphazardness in use of rational controls, sensitivity, free in use of aggression and conflict over dominance and authority.

(5) Group Rorschach results comparison (N = 129; 104 psychologists + anthropologists) with the eminent group suggest the latter to be more original and less controlled (compare with other scientists).

ROE A.: "A psychological study of physical scientists". Genet. Psychol. Monogr., 1951, 43, 121-239.

Theoretical Orientation and Hypothesis:

See study of eminent biologists.

Subjects:

22 eminent physical scientists (American born*, aged 60 years and under, and actively engaged in research), representing fields of specialization as follows:-

9 - Theoretical physicists
9 - Experimental physicists
3 - Physical chemists - theoretical
1 - Physical chemist - experimental

Selection of subjects is broadly similar to the biologist study with the qualification that the original list (N = 69) is constructed by a California Institute of Technology physicist. The physicists are not as responsive to the invitation to participate as the biologists, and frequently checked with colleagues about the investigator.

Method:

Similar to biologists study.

Results:

Brief statement of results is given here: refer to monograph for details.

(1) Age range is 31 to 56, $\overline{X}$ = 45 (biologists 38 to 58, $\overline{X}$ = 51).

(2) Parental family backgrounds are generally superior with respect to occupational and educational level, particularly the theorists.

(3) Early poor health is reported by theorists, generally of a disabling sort or a poor constitution with consequent interruptions of schooling and long periods of isolation.

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* There is one foreign born subject, accidentally included.

(4) For the theorists college education is taken for granted; not so for the experimentalists where family deliberations and planning about education are more apparent.

(5) Early intellectualisation of interests, inhibited development of social interests, restricted social interests are evident.

(6) Experimentalists are more similar to biologists than their theoretical counterparts in terms of parental occupational status.

(7) V.S.M. test results are wide in range as with biologists and with an unexpectedly lower limit. Maths. component is omitted as it is not difficult enough; T.A.T. results show same concern with the concrete-factual as with biologists with the theorists being more definite in statements of outcome, with marked independence of parents and personal relations generally; Rorschach results show great and often not too well controlled intellectual and emotional energy, high percent of responses in unusual areas; theorists show greater awareness of personal problems, more controlled handling of anxiety, preoccupation with concepts, and poor social adjustment attributable to (1) apathy about social relations or (2) impulsiveness and egocentricity.

(8) As with the biologists, there is absorption in work over a long period of time.

(9) Comparison of the eminent group with the Group Rorschach subjects (N = 48) does not suggest any differences between the two.

SEGAL S.J.: "A psychoanalytic analysis of personality factors in vocational choice". J. counsel. Psychol., 1961, 8, 202-210.

Theoretical Orientation:

If vocational choice is viewed as a concrete expression of personality development within the framework of environmental pressures and opportunities with which the individual is confronted, then the same theoretical factors that have been helpful in understanding personality development should be applicable to understanding vocational choice. This study uses the approach of designating two occupations, viz., accountant and creative writer by way of occupational information and general stereotypes, interpreting same in terms of psychoanalytic theory to make predictions as to common personality characteristics in the two groups.

Hypothesis:

From job descriptions based on occupational and general stereotypes of the two occupations and a psychoanalytic presentation of the genetic development of conforming attitudes and rebellion against them which the author argues distinguishes the stereotypes, seven hypotheses are made.

(1) There is no difference in the general adjustment level of creative writing and accounting students.

(2) Accounting students show a greater conformity to social norms than creative writing students.

(3) Accounting students show greater attempts at emotional control than do creative writing students, while the latter show more awareness of feelings and emotions.

(4) Compulsive defenses are seen with greater frequency in the accountants as compared to the creative writers.

(5) Creative writing students show greater signs of hostility than accounting students.

(6) Creative writers show greater tolerance for ambiguity and greater ability to deal with complex emotional situations than accountants.

(7) Signs of a more rigid, fearful identification are

seen in accounting students as compared to a seeking for completion of multiple identification in creative writing students.

Subjects:

15 accounting students and 15 creative writing students. The first group is selected from advanced students in accounting curriculum who received A or B+ on accountant key on S.V.I.B. and the second group is selected from advanced English students having B- or lower on accountant key on S.V.I.B. No significant differences in age, rural-urban background, and I.Q. are found.

Method:

Subjects complete the Rorschach (Klopfer's instructions), Bender-Gestalt (using Hutt's instructions) and write a one page vocational autobiography, the emphasis being upon the development of their choice as accurately as this can be remembered.

Results:

Results are not reproduced in detail here. 30 specific variables are tested in the hypotheses, 17 reaching a 5% level of significance. The probability of the occurrence of this result by chance $<.001$.

SMALL L.: "Personality determinants of vocational choice". Psychol. Monogr., 1953, 67, 1-21. Whole No. 351.

Theoretical Orientation:

Vocational choice is in good part an ego function. In the vocational, as with other aspects of life, individuals seek need satisfaction. When a need is consciously felt it is subject to control and modifications by realistic factors; when it is unconscious, control is less direct and often tenuous. A healthy ego permits check of drive for need satisfaction against facts provided by the environment and the individual's faculties. Deferment of gratification and realism are characteristics of the healthy ego. Fantasy is also a component of the ego, both healthy and disturbed. The difference lies in the nature of the individual's action: is action dominated by fantasy or is fantasy tempered by reality. The choices of individuals with differing ego strengths will reflect differences in the use of reality and fantasy.

Hypothesis:

Individuals with different ego strengths will show differences in the use they make of reality and wishful fantasy in making their vocational choices.

Subjects:

50 maladjusted males, aged 15-19 (referrals from psychiatric hospitals) - called the Disturbed Group. 50 better adjusted males, aged 15-19 - called the Comparison Group.

The subjects are selected in the following manner for each group:-

(1) ten boys at each age level 15, 16, 17, 18, 19.

(2) ten boys at each age level comprise eight whites and two negros, and in terms of religion, five Catholics, three Protestants and two Jews.

(3) all are native born Americans of families in the lower middle class economic groupings.

All subjects are clients of a Vocational Advisory Service.

Method:

The disturbed group and comparison group are assumed to reflect differences in ego strengths. The psychiatric evidence for the disturbed group is unquestionable. Subjects in the comparison group do not submit to psychiatric examination.

Subjects name five vocational choices in order of preference. Because most subjects stated two preferences, the research data is restricted to two choices.

Reality content of choices is assessed by a discrepancy score (R.D.) based upon a four point rating of job requirements and personal characteristics. The job requirements rating is based on the D.O.T. and the personal characteristics rating of the subject is made by the counsellor dealing with the case. The smaller the discrepancy value the closer to reality is the choice. Fantasy content is obtained by a job concept interview divided into the fantasy involved in the first and second choices. Fantasy content is rated on a three point scale. In this interview, the individual's aversions; his reasons for them; his choices and reasons; identifications; his comprehensions of realities in his choice - what is done, how is it done; his account of a future typical day in his chosen work; his opinions of likely attitudes of family, significant others, society and himself to those in his chosen occupation; his actual or made up dreams about his choices are obtained. In short the subject is "led" into fantasy and the content related to a modification of Murray"s 1938 system of needs. (27 needs are specified.) Results for the subjects on the Wechsler Bellevue scale are also used.

Results:

Reality Deviation (R.D.) scores for the two groups for first choice are significantly lower for the comparison group, i.e., their choices are more realistic. The same is true for the second choice, the difference being less marked than for the first choice. The second choice of the comparison group is less realistic than its first, and for the disturbed group the second choice is more realistic than its first though on neither occasion are its choices more realistic than those of the comparison group.

The author suggests that the better adjusted boys utilise reality perception fully in their first choice, i.e., the choice that means most to them and then allow fantasy components a greater role in their second choice and that the reverse applies with the disturbed group.

The average I.Q. of subjects making choices in the entry classifications (D.O.T.) is higher than those making choices in different entry classifications (121.3 vs. 107.5). Further, almost twice as many of the comparison group make similar choices in this sense than the disturbed group. Also, the average I.Q. of the disturbed group is lower than that of the comparison group (112.1 vs. 102.2) suggesting the possibility of impairment of native endowment. A comparison of (1) I.Q. scores (2) I.Q. subtest scatter (3) mean reality deviation scores is presented for those with similar and different entry classifications for both the disturbed and comparison groups. The analysis, though not significant suggests a positive relationship between similar choices on the one hand and higher I.Q., less functional scatter and greater realism on the other.

Analysis of the fantasy content in terms of needs indicates that the comparison group exercise their skills, talents and intelligence in seeking an involvement with the environment whereas the disturbed group turn away from the environment. (The specific needs and their directional differences are not reproduced here - refer to monograph for details.)

Discussion:

Ginzberg et al. contend that fantasy predominates in choice behaviour before age 11 and gives way to realistic factors as age increases. This research does not support this view: instead, it tends towards compensatory balances of realism and fantasy throughout the age range studies. The study supports Ginzberg's notion of "compromise" locating the latter as a function of ego strength. In the Ginzberg monograph the nature of the compromise process is not explored.

STEPHENSON R.R.: "Occupational choice as a crystallized self concept". J. counsel. Psychol, 1961, 8, 211-216.

Theoretical Orientation:

This study is concerned with crystallisation of vocational self concept before application to a school of professional training, viz., medicine. Because choice has different meanings according to stage of development, e.g., preference entry, etc. (see Super) the author is concerned to locate subjects who are beyond the stage of preference and have acted in a reality testing way.

Hypothesis:

Has the vocational self concept of the premedical student crystallized before application to a school of medicine.

Subjects:

Premedical students from a college of the University of Minnesota who apply for admission to the Medical School, i.e., subjects who act on a preference, i.e., entered college, complete the prerequisite premedical training and then apply for admission to medical school and who are presumably through the "exploratory" stage. The author is specifically concerned with non admitted applicants, 368 in number,

Method:

The non admitted applicants are surveyed for present status. Present status is categorized as (1) M.D. occupations (2) related professions, e.g., dentist, occupational therapist (3) medical services, e.g., medical technologist (4) non-medically related.

Results:

Details are not reprodced here but the data shows that students who make a strong commitment to medicine, i.e., premedical college and apply for admission to medical school qualify elsewhere as doctors or perseverate in a logically related or compromise occupation. The author concludes that the subjects have a crystallised self concept before application to enter medical school and persist in its implementation through early adult history.

Discussion:

This study takes evidence relating to perseveration in a similar or related field of a group who do not gain admission to a medical school and concludes that the evidence supports the view that the subjects have a crystallised self concept. In point of fact, the evidence supports the conclusion as a hypothesis to be investigated. There is no measure of self concept. As a piece of research it is an example of what Brayfield describes as "sloppy work" in the self concept area.

STONE L.A.: "Relationship of utility for risk to college year, sex and vocational choice". J. counsel. Psychol, 1962, 9, 87.

Theoretical Orientation:

See study of R.C. Ziller.

Hypothesis:

No hypotheses are stated. This study is designed to confirm (or infirm) Ziller's conclusions.

Subjects:

279 freshman to senior students at University of North Dakota.

Method:

A measure of utility for risk (adaption of Ziller's) is given. Stated occupational preferences are known (freshmen only) from personnel records.

Results:

Utility for risk is not differentiated by sex or by college year. Using occupational preference data categorized into 28 groups and eliminating those with small numbers some observed differentiation in risk proclivity is obtained (not significant).

Discussion:

The results do not support Ziller's study. The practical usage of measures of utility for risk regarding vocational choice seem limited principally because of the large amount of within group variance.

SWITZER D.K. et al. "Early experiences and occupational choice: test of Roe's hypothesis". J. counsel. Psychol, 1962, 9, 45-48.

Theoretical Orientation:

According to Roe parents create a particular psychological climate by the manner in which they frustrate or satisfy the early needs of the child. As a result, a basic direction of attention is developed towards persons or towards non-persons, which in turn results in predictable patterns of vocational interests. (See other summaries of tests of Roe's hypothesis, viz., Hagen, Utton, Grigg.)

Hypothesis:

Ministerial students will perceive their parents as having been more overdemanding and less rejecting than will a group of chemistry majors. A secondary hypothesis concerns differences between the perceived attitudes of both parents and whether the interaction of maternal and paternal attitudes is more predictive of occupational choice than the combined attitudes of the parents taken as a single unit. (Roe does not devote much attention to this possible influence on occupational choice.)

Subjects:

Three groups of 40 subjects each selected from Southwestern University and Southern Methodist University: one group ministerial majors: one group chemistry majors: one group male graduate theology students included to provide a gross approximation of the change occurring, if any, following increase in age and additional training for the profession. All subjects state a strong personal commitment to the occupation indicated.

Method:

Each group is given a 50 item questionnaire (statements scaled by the method of equal appearing intervals), constructed to measure parental attitudes with reference to the dimensions of "over-demanding" and "rejecting".

Results:

Mean perceived parental attitude scores are presented by scale, i.e., overdemanding vs. rejecting, by sex of parent and college major and are contrary to the expectation based on Roe's hypothesis, i.e., ministerial and theology parents tend to score lower on overdemanding scale than chemistry parents and chemistry parents tend to score lower on the rejecting scale. Three analyses of variance are reported (1) for ministerial and chemistry groups (2) for ministerial and theology groups (3) for chemistry and theology groups, the latter two providing a further test of Roe's hypothesis by comparing the two major groups with a group presumably more comitted to the ministry.

For the first analysis significant F's are reported:-

(a) between parents with fathers tending to be more overdemanding and rejecting;

(b) between scales;

(c) interaction between parent and major with ministerial fathers having higher scale scores on both scales than chemistry fathers and ministerial mothers having lower scale scores of both scales than the chemistry mothers; and

(d) the scale by major interaction is not significant. A significant F is expected in terms of Roe's theory with ministerial parents being more overdemanding and less rejecting than chemistry parents.

For the second analysis there are:-

(a) no significant differences in scale scores between groups; and

(b) significant F's between parents, between scales, and parent scale interaction.

For the third analysis there is one significant difference, viz., scale by major interaction, a result to be expected in terms of Roe's hypothesis. However, the differences are in the wrong direction with chemistry parents tending to be more overdemanding and theology parents more rejecting.

Discussion:

This study fails to support Roe's hypothesis. The authors concede the possibility that the questionnaire may not be an adequate and sufficient test. A significant finding is that there are differences between perceived attitudes of parents, a feature not adequately accounted for by Roe. In this study ministerial subjects are classified in Group VII and not Group I, i.e., more interested in theology than in people (refer to description of Roe's theory in Part I).

TIEDEMAN D.V. and BRYAN J.G.: "Prediction of college field of concentration". Harv. Educ. Rev., 1954, 24, 122-139.

Theoretical Orientation:

This study is similar to that of Tiedeman and Sternberg and is concerned with demonstration of the discriminant analysis.

Hypothesis:

No specific hypothesis.

Subjects:

289 Harvard College freshman.

Method:

The subjects take the Kuder Preference Record-Vocational in the freshman year. Inclusion in the study is based upon known field of concentration in the sophomore year and obtaining a sophomore rank list of four or better, i.e., of those taking the Kuder only those who are "successful" in their chosen concentration are included for statistical analysis.

Results:

The authors simply present the data to demonstrate the technique and state, "... the data of this paper are by no means ready for clinical use". The results, as with the other studies of this type in the Harvard Studies in Career Development, are presented in centour scores which provide a probability statement analogous to the t test. The centour score gives the percent of errors made from rejection of the hypothesis that a subject is a member of a particular group. As an example, consider one discriminant function and two groups. A particular discriminant score 45 gives centour scores of 80 (Group 1) and 20 (Group 2). If the counsellor says that a client with a discriminant score of 45 will not concentrate in Group 1, then he will "lose" or be in error in 80% of his statements and for Group 2, 20%. Thus he will be inclined to say to the client that his abilities (interests, etc.) are more like those choosing Group 1. Where there is more than one discriminant function, there will be a corresponding increase in the number of discriminant scores.

The table of centour scores provides for the number of discriminant scores. The interpretation of the centour score is the same.

TIEDEMAN D.V. and STERNBERG J.J.: "Information appropriate for curriculum guidance". Harv. Educ. Rev., 1952, 22, 257-273.

Theoretical Orientation:

This paper is not concerned with hypotheses generated from psychological theory, but rather with demonstration of an alternative technique to regression analysis in handling the integration of job and man analyses expressed in the Parsonian view of the guidance process. The authors argue that the alternative proposed, viz., discriminant analysis is more appropriate to the practical and more frequently encountered guidance problem of determining whether groups differ with respect to abilities or not; that regression analysis is still appropriate to estimation of relative standing within a particular group but that this latter consideration is not usually crucial to the client in his choice behaviour. Additionally the discriminant analysis permits generation of probability statements about group membership on the basis of multivariate discriminant scores.

Hypothesis:

There are no specific hypotheses.

Subjects:

207 high school 9th grade pupils confronted with curriculum choice prior to entry to 10th grade.

Method:

The subjects take form A D.A.T. in 9th grade. The results are not used in assisting with curriculum choice. In the following year the curriculum group and first semester grade average for each group are obtained. There are two groups, viz., business curriculum (N = 132) and college preparatory (N = 75).

The data is treated statistically by (1) regression analysis (2) discriminant analysis and the implications for guidance discussed.

Results:

The results show that if students choose curriculum in which they obtain the highest grade average they will select college preparatory. This applies for the eight measures of the D.A.T. and is not materially different when the data is treated by multiple regression. If the assumption that the mark scales for the two groups are comparable is rejected and criterion scores are transformed to standard scores then paradoxically subjects will choose the business strand if choice is to be based on highest expected grade relative to average grade for the curriculum. Thus the authors contend that regression analysis confuses rather than clarifies choice. Graphical analysis of the data shows that there is tendency for differentiation between the groups on the basis of the measures. An 8-dimensional analysis of the data using the discriminant function shows that the D.A.T. by no means clearly distinguishes the two groups, i.e., there is overlap in the distributions of discriminant scores but that it does a "pretty fair" job of differentiating those who choose the two different curricula even though it does not do such a good job in average mark prediction.

Discussion:

Regression and discriminant analyses are concerned with two different questions so that comparisons of their relative efficiencies are difficult. The authors' contention that guidance workers frequently do not use regression data correctly is well taken and their argument that clients do not always choose the group in which they are most likely to succeed is relevant. There is, however, no need to discard regression analysis (the authors do not propose such a step) but simply recognise the value of both procedures.

UTTON A.C.: "Recalled parent-child relations as determinants of vocational choice". J. counsel. Psychol, 1962, 9, 49-53.

Theoretical Orientation:

This is a test of part of Roe's theory. (Refer to other summaries - Hagen, Grigg, Switzer et al. and Part I, section dealing with Roe's theory).

Hypothesis:

(1) Subjects employed in occupations oriented towards persons manifest greater altruistic love of people than those subjects employed in occupations which are primarily non person oriented; and

(2) Subjects employed in person oriented occupations will recall their early childhood environment as having been warmer than that of subjects employed in non person-oriented occupations.

Method:

Hypothesis 1. Subjects complete Allport Scale of Values. Social scale only is analyzed.

Hypothesis 2. Subjects complete the Childhood Experience Rating Scales and the Parent Attitude Survey. The latter is used to verify possible distortions due to projection and response set. Subjects also complete S.V.I.B.

Results:

Hypothesis 1. The mean Social Scale score of person-oriented subjects differs significantly from that of non person-oriented subjects ($P < .01$).

Hypothesis 2. The mean Childhood Experience Rating Scales scores for the two groups are not significantly different.

Further analyses of results are presented.

(1) Regardless of occupation, subjects are divided into two groups, one above, the other below the published mean for females on the Social Scale of the Study of Values. No significant differences on the Childhood Experience Rating Scales are reported.

(2) Within the occupations, subjects are divided into two groups, one 'B' or better on the S.V.I.B., the other with interests below that level and then compared on the Childhood Scales. Social workers and therapists rating B or higher, i.e., those closely resembling their professional colleagues, recall family atmosphere as significantly warmer.

(3) Further analysis of the group (B or better) indicates that therapists and dietitians recall family background as warmer than that of the social workers and laboratory technicians.

(4) Analysis of interrelationships between the various Childhood Experience Scales indicates that social workers feel less accepted by parents than occupational therapists and dietitians; that laboratory technicians recall parents as being more critical of their actions than are the parents of therapists; that there is greater recalled rapport between parents of dietitians and their children than between parents of social workers and their children.

Discussion:

The evidence from this study does not support Roe's theory as a whole. The finding that people in occupations with a welfare orientation exhibit a stronger commitment to social values is consistent with Roe's hypothesis just as is the finding that those highly interested social workers and occupational therapists recall their family atmosphere as having been significantly warmer.

The author concedes the possibility of response set bias as well as the limitations inherent in a retrospective rather than a current observation approach. The impracticality of the latter is obvious.

WALKER K.F.: "A study of occupational stereotypes". J. appl. Psychol, 1958, 42, 122-124.

Theoretical Orientation:

The concept of stereotype has been fruitfully applied in social psychology research, but little attention has been given to occupational stereotypes. Previous research has demonstrated the directional effects upon personality trait perception of others of such factors as pro- and anti-labour sympathies, membership of different income groupings and ascription of roles, e.g., union vs. management, factory worker vs. executive to the perceived subjects.

Hypothesis:

There is no theory generated hypothesis. The aim of the study is to determine whether the technique used by Katz and Braly to investigate ethnic stereotypes will yield comparable occupational stereotypes relevant to industrial relations.

Subjects:

68 male and 56 female university students, age range 17-46 (male) with median = 20.4 years and mode = 18 years and for females 17-30 years with median = 17.5 years and mode = 18 years.

Method:

The instrument contains 112 adjectives and 10 occupational groups. The subjects select the five adjectives which in their opinion best describe each group. They also rate their political sympathies on a five point scale running from strongly pro-Labour to strongly pro-Liberal or Country Party.

They also rank the 10 occupational groups in order of preference if circumstances permitted them to choose any of them for their life work.

The strength of stereotypes is measured by a special stereotype index prepared by Katz and Braly.

Results:

Results are presented in the form of a table giving the rank order of preference of the occupations, the stereotype comprising the first five adjectives in order of frequency of listing, and stereotypy index.

Example:

Schoolteacher: well educated, intelligent, tolerant, fair-minded, friendly.

Factory owner: ambitious, industrious, practical, efficient, progressive.

N.B. A smaller stereotypy index indicates greater agreement among voters.

There are no significant differences between sexes, nor between different political party sympathizers; students expecting to enter a particular occupation do not give significantly different responses from those expecting to enter other occupations. Rank difference correlation between degree of stereotypy and order of preference for occupations is + 0. 79. Many differences in the content of the stereotypes are evident.

Comparison with ethnic studies of Katz and Braly show that occupational stereotypes are approximately as strong as ethnic stereotypes.

Discussion:

The author comments that whatever degree of validity is attributed to the ethnic stereotypes obtained by this technique must likewise be attributed to occupational stereotypes and that the existence of such stereotypes seems to accord with common sense observation. The truth or falsity of occupational stereotypes remains to be established. The study throws no light on factors responsible for the stereotypes.

WARREN J.R.: "Self concept, occupational role expectation and change in college major". J. counsel. Psychol, 1961, 8, 164-169.

Theoretical Orientation:

Choice of an occupation is made in the expectation that occupational role will be consistent with self concept. If this is correct, then college students should specialise in fields in which they expect to lead an occupational role consistent with self concept. A discrepancy between self concept and occupational role should be corrected by a change in field of specialisation and in associated occupational roles.

Hypothesis:

Changes in college field of specialisation or college major are likely to occur when a discrepancy exists between self concept and expected occupational role.

Subjects:

525 National Merit Scholarship holders entering approximately 200 widely dispersed colleges in 1956.

Method and Results:

Subjects state proposed field prior to entering college. Measure of self concept is obtained prior to entry. Measure of expected occupational role is obtained in freshman year as well as actual field of specialisation. Warren uses discrepancy in an unusual sense. His measures of self concept and expected occupational role are different but related variables. If the theoretical orientation is correct then, in his study, incompatible self-role conjunctions should occur infrequently. He takes as an indicator of a discrepant self-role relationship the occurrence of an infrequently observed relationship between patterns in the self concept measure and patterns in the occupational role measure.

Change in field is indicated under three headings (1) no change (includes a change from a broader field, e.g., physics to a more specific study in the same field, e.g., meterology) (2) minor change (change between closely related fields, e.g., engineering to physics) (3) major change (change between unrelated fields, e.g., engineering to music).

If the hypothesis is tenable then it is expected that self-role discrepancies will be higher among subjects who made major changes than those who made either minor changes or no changes. The results do not support the hypothesis.

Warren proposes a second hypothesis, viz., that two or more changes might be expected in the reduction of extreme discrepancies. Accordingly he examines the scores of those who made a single major change, double change and double minor change in the expectation that higher scores will be found in each category in the direction single to double major. Results support this hypothesis ($P < .05$).

Reasoning that the relationships implied in the original hypothesis may be masked by other variables he then examines the scales of the self concept measure, S.A.T. and grade point average in relation to change of field. G.P.A. differentiates in the expected direction, i.e., low scorers change; and one scale (Thinking Introversion) in the unexpected direction.

ZILLER R.C.: "Vocational choice and utility for risk". J. counsel. Psychol. 1957, 4, 61-64.

Theoretical Orientation:

This paper examines the application of stochastic models of decision making to vocational choice. The vast array of vocational choice alternatives is reduced as a consequence of psychological variables, economic limitations and lack of information. The remaining alternatives vary with respect to prize, i.e., what the person stands to gain in event of success, price, i.e., what he stands to lose in event of failure and probability of success, i.e., the number who succeed over the number who enter. In deciding, price and prize are compared under the condition of probability of success. Does such a decision making model apply to vocational choice? Ziller suggests that willingness to take a risk may also be a parameter of decision making under uncertainty and may in fact be a more fruitful area of investigation for psychologists. Clearly, in vocational choice, prize, price and probability of success are more subjective in nature and also are subject to continuous change as a result of the decisions of others, and economic and social changes.

It seems reasonable to suppose that vocations vary with regard to the degree to which prize is commensurate with price under the given condition of probability of success. Thus a sales position in a technical field may offer the prospect of greater gains if successful, and greater loss if unsuccessful and lower probability of success than the related non-sales technical field. Choice of the former entails a greater degree of risk and may be predicted from a measure of utility for risk.

Hypothesis:

Vocational choice is a decision making situation in which risk plays a major role, and therefore, individual risk taking tendencies determine, in part, occupational choice.

Subjects:

182 University of Delaware sophomores.

Method:

The measure of utility for risk (i.e., ability to sustain a loss in a decision making situation under conditions of uncertainty and risk) is based upon an achievement test in which the subjects are aware that they will be penalized for incorrect guesses. Theoretically, risk utility is assessed by the ratio of the number of guesses to the number of items not known by the subject. Thus, for two subjects not knowing the same number of items, the risk score of the subject hazarding the greater number of guesses is greater. For practical purposes, the risk score is the ratio of twice the number of incorrect responses to twice the number of incorrect responses times the number of items omitted. Vocational choices are obtained from a questionnaire.

Results:

Results are expressed in the form of mean risk scores for a limited range of occupations. Sales occupations show the highest risk proclivity followed by mechanical engineers, educators, business administrators, chemical engineers, electrical engineers, civil engineers in that order. The results are statistically significant at the 5% level.

Discussion:

The results offer limited support for the theory. The test of the hypothesis is affected by the restricted range of occupational groupings and small numbers in the groupings.

SOME OBSERVATIONS

As stated in the introduction the purpose of this report is to present an account of research in a particular strand of vocational psychology. There are, however, several points about which some general comment is appropriate: (1) the research focus on curriculum choice as a criterion of vocational choice (2) the method and design of the research (3) hints of a change of orientation in research activity and (4) the prospects for a theory of vocational choice.

1. Clearly much of the research reported in this paper is not concerned with vocational choice as such but rather with an intermediate criterion of choice, viz., college or high school field of curriculum specialisation. Adoption of a developmental framework readily permits this approach. In this framework, choice of career as one of the two "big" decisions in Rosenberg's terms (97), (the other being marriage), is related to and influenced by earlier decisions which limit possible alternatives open to the young person. However, acceptance of this intermediate criterion implies a responsibility to explore the relationship between choices, performance and subsequent choices at successive points in development. Very few of the studies tackle this question. Exceptions are Kibrick and Tiedeman (61), Stephenson (104), Holland (56) and Warren (132). Unquestionably the longitudinal Career Pattern Study will also provide evidence on this point.

2. There are points of criticism about method and design which could be levelled against the reported research, e.g., uncontrolled variables, small and/or non representative samples, theoretical orientations implying a causal connection between variables which is not put to the test by the design. Many authors admit these limitations in their articles. Repetition of such points in the text did not seem necessary.

3. The impetus to the vocational development movement comes originally from dissatisfaction with trait psychology and an attribute matching model of vocational choice. The earlier studies of the Harvard group, for example, are very much in the Parsonian tradition of the guidance process. The emphasis in current research is on the phenomenological approach, i.e., the way in which the individual perceives his environment and himself. Thus there has been a movement from interest in vocationally relevant attributes of which the individual may not be aware or may become aware through guidance/counselling on the one hand and criteria of performance on the other to concern with self and work environment

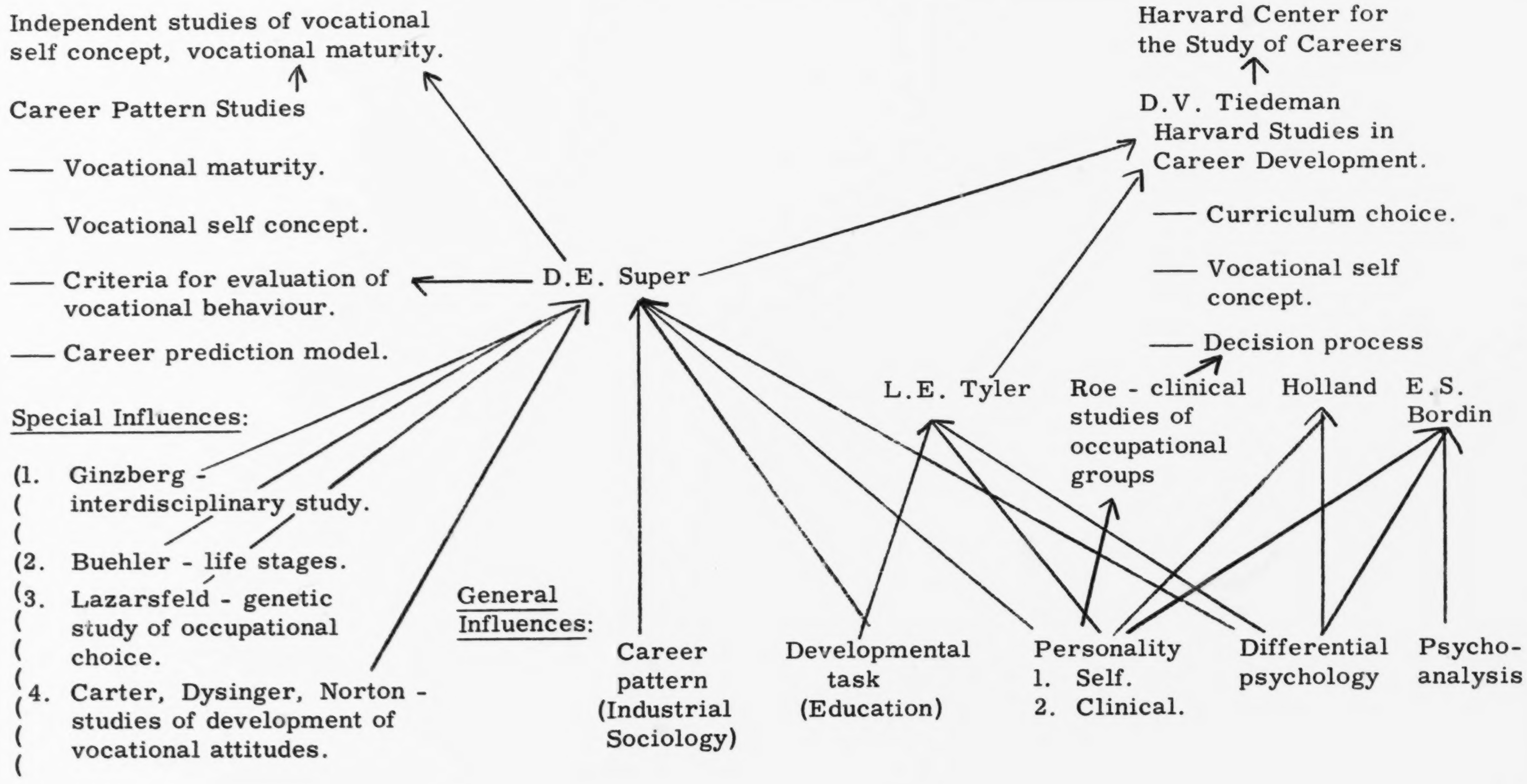
perception, it being expected that congruence between these percepts will clarify understanding of the choice process. In this endeavour the vocational choice theorist relies on trait psychology for the choice of variables or alternatively constructs attributes from job analysis (for example see (9) and (34)), a strategy which results in quite different operations for his hypothetical construct, the self concept. Although the central position of the self concept in this area of research is reiterated in recent work (35), concern that the phenomenological and developmental orientations may not be rewarding has been expressed. For example, Beilin (5) suggests that vocational choice theorists look to the cognitive strategies of Bruner and his associates and Piaget's work on concept formation as alternative approaches.

4. What is the prospect for a theory of vocational choice? Super's formulation resembles more a "grand design" than a theory and Tiedeman is currently committed to the self concept as a means of understanding and presumably predicting performance in vocational endeavour. Some reviewers, e.g., Hewer (50) consider that the prospects for a theory of vocational choice are poor and look to the various psychologies, e.g., trait, personality, developmental to provide research data and frameworks within which the decisions of young people may be structured. In this context, counsellor responsibility (99) and communication of such data and its potential significance to the client (64) become key issues.

A final observation: this research is concerned with how individuals typically not maximally make choices. It is conducted within a context of possible usage in counselling. Clearly the two issues (1) what the person does and (2) what he should or might do are linked in varying degrees in the frameworks and theoretical orientations presented.

APPENDIX I

DIAGRAM SHOWING MAIN INFLUENCES AND TRENDS IN VOCATIONAL DEVELOPMENT RESEARCH


Independent studies of vocational self concept, vocational maturity.
Career Pattern Studies
— Vocational maturity.
— Vocational self concept.
— Criteria for evaluation of vocational behaviour.
— Career prediction model.
Special Influences:
(1. Ginzberg - interdisciplinary study.
(2. Buehler - life stages.
(3. Lazarsfeld - genetic study of occupational choice.
(4. Carter, Dysinger, Norton - studies of development of vocational attitudes.
D.E. Super
General Influences:
Career pattern (Industrial Sociology)
Developmental task (Education)
Personality
1. Self.
2. Clinical.
Differential psychology
Psycho-analysis
L.E. Tyler
Roe - clinical studies of occupational groups
Holland
E.S. Bordin
Harvard Center for the Study of Careers
D.V. Tiedeman
Harvard Studies in Career Development.
— Curriculum choice.
— Vocational self concept.
— Decision process

APPENDIX II

Possible Determinants of Career Patterns

(from SUPER, D.E.: Vocational development: a framework for research. New York: Columbia Teachers' College, 1957.)

I Individual characteristics and experiences

A. Psychological characteristics

- Intelligence
- Aptitudes
- Interests
- Personality (attitudes, values, specific traits, needs)
- Temperament
- Self concept
- Drive (level of aspiration)

B. Physical characteristics

- Height
- Weight
- Body structure
- Physical strength
- General health
- Endocrine balance
- Adequacy of physiological functioning
- Special physical assets
- Special physical handicaps

C. Experiences

- Amount and quality of education
- Amount and quality of specialised training
- Special skills
- Prior work history
- Hobbies
- Organisational membership
- Social and recreational activities
- Amount and quality of interpersonal relationships e.g. acceptance of others, acceptance by others
- Identification with role models
- Rejection of role models
- Concept of others

II Individual's personal situation

A. Parental family background

- Socioeconomic status of parents
- Family financial situation
- Father's job
- (Possibly) mother's job
- Occupational mobility in family background
- Reputation of family in community
- Place of family (sibling order, only child)
- Number of siblings
- Parental aspirations
- Cultural stimulation
- Interpersonal relationships in family.

B. Own family situation

- Married, single, separated, divorced
- Number, health, sex, age of dependents
- Aspirations of spouse
- Interpersonal relationships in family

C. General situation

- Current socio-economic status
- Current financial situation
- Current job
- Personal reputation
- Geographical location -
    1. Region
    2. Urban-rural
- Military service obligations
- Citizenship
- Race
- Religion
- Competition encountered, e.g., in school, in job, etc.
- Attitudes of significant others:
    a. towards the individual himself
    b. towards work

III Individual's environment

- Economic conditions in country, area, community
- Occupational structure of area and community
- Occupational trends
- Community attitudes about occupation
- Peace or war conditions
- Technological developments
- Characteristics of the era

IV Non predictable factors

- Accident to self or to important others
- Illness to self or to important others
- Death of important others
- Unanticipated opportunities
- Unanticipated liabilities, e.g., property losses

APPENDIX III

The Career Pattern Study

The description of the Career Pattern Study in this document refers to the twenty year longitudinal study of the vocational development of Middletown (New York) high school pupils begun 1951-2. It is conducted under the direction of Professor D.E. Super, Professor of Education, Columbia Teachers' College. There are other Career Pattern Studies, e.g., Hyman's study of the relationship of social status and vocational interests (58) and a series of essays in vocational development (see (35) for examples).

The purpose, method and subjects of the Career Pattern Study began in 1949 in the form of a working paper prepared by Super which subsequently appeared in the Journal of Counseling Psychology (109). The origins of the Study (118) are seen in a number of stimulating and facilitating influences:-

(1) Ginzberg's highlighting of theory deficiencies in vocational choice;

(2) Super's attempt to synthesise available data concerning the psychology, sociology and economics of vocational development;

(3) Super's participation in Ginzberg's research on vocational choice;

(4) the congregation of a team of faculty members and senior students at Columbia Teachers' College who were interested in the topic of vocational development; and

(5) the incorporation of the project in the Horace Mann-Lincoln Institute of School Experimentation, which removed worries concerning financial support.

The purpose of the Study is to trace the vocational development of a group of boys to ascertain the psychological and social factors associated with the patterning of their careers, with the further objective of formulating and to some extent documenting a theory of career pattern (109).

The subjects are 285 male Middletown Junior High School and High School students enrolled in the eighth and ninth grades in 1951-52. The basic data is collected in 1951-2 and the subjects are followed up at the following points:-

(1) twelfth grade - 17 to 18 years of age

(2) second year in college or at work - 19 to 20 years of age

(3) third year out of college or eighth year out of school - 24 to 25 years of age

(4) thirteenth year out of college or seventeenth year out of school - 34 to 35 years of age

The data collection is to be completed in 1971-1972.

Middletown is a self contained community of approximately 25,000 (1951-52), slow in economic development and characterised by a variety of industrial, business and agricultural enterprises. The majority of wage earners grew up in Middletown or came there more than twenty years ago. There is some movement in and out of the community (110, 119).

Since (1) the purpose is broad, viz., ascertain psychological and social factors associated with career patterning and (2) Super seems to work within a diffuse framework of possible internal and external determinants (118), it is not surprising that the basic data includes a wide variety of tests, self ratings and questionnaires relating to abilities, interests, values, personality, achievement and biographical material (26 in number) plus a series of four interviews with the subjects about leisure time activities, school, the family and plans and one interview with parents covering such aspects as parents' self perceptions, parental occupation history and parental societal attitudes. The tendency to provide an "interesting descriptive listing" of all possible factors associated with the development of interests has been criticised by Darley and Hagenah (28). They comment that it is difficult to derive a specific set of hypotheses to guide research or to account for existing research findings on the basis of Super's summary (108). In reply, Super recognises this deficiency (118) and prefers to formulate working principles rather than attempt prematurely to deduce testable hypotheses.

The design of the Study permits the collection of a wide variety of data. Analyses relevant to diverse problems is thus possible, e.g., the study of vocational maturity (119); and elsewhere[1], the relation of vocational maturity to the Interest Maturity Scale of the SVIB; and criteria for evaluation of behaviour (116).

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[1] See Layton, W.L. (Ed.). The Strong Vocational Interest Blank: Research and Uses. Minneapolis, Minnesota: University of Minnesota Press, 1960.

Basically, however, the study is concerned with (1) career patterns (2) their determinants (3) career prediction models utilising (1) and (2). Relevant to this are two observations by Super:

(1) the career pattern is not as central to the Study as originally proposed; it is not an explanatory principle but rather a useful label for a method of portraying vocational development (118); and

(2) the career prediction model which is concerned with prediction from several points in time to a later series of points in time lacks an appropriate statistical vehicle; the use of the thematic-extrapolative method is thus at best a temporary expedient (115).

Six monographs are planned to report the Career Pattern Study:

(1) Vocational development: a framework for research.

(2) Vocational maturity of ninth grade boys - analysis of maturity of vocational thinking, behaviour, abilities and traits of the high school freshmen of Middletown, New York.

(3) The years of exploration - vocational development during the high school years, based on a follow up study in the twelfth grade.

(4) The years of transition - a study of the transition from school to work and of the first years of employment.

(5) The years of trial - a study of the late exploratory and early establishment periods.

(6) The patterning of careers - a study of factors determining the careers of boys and young men of Middletown, ages 14 to 45. To date (1) and (2) have appeared (119, 118).

APPENDIX IV

Roe's Classification of Occupations

LEVEL	GROUP							
	a SERVICE	b BUSINESS CONTACT	c ORGANIZATION	d TECHNOLOGY	e OUTDOOR	f SCIENCE	g GENERAL CULTURE	h ARTS AND ENTERTAINMENT
A	Counsellors	Promotor	International Banker	Consulting Engineer	Consulting Specialist	Research Scientist	Scholar	Museum Curator
B	Occupational Therapist	Public Relations Counsellor	Business Executive	Engineer	Landowner (large)	Pharmicist	Editor	Art Critic
C	City Inspector	Dealer	Employment Manager	Radio Operator	Farm Owner	X-Ray Technician	Reporter	Interior Decorator
D	Policeman	House Canvasser	Sales Clerk	Blacksmith	Miner	Technical Assistant	Law Clerk	Photographer
E	Waiter	Peddler	Typist	Bulldozer Operator	Gardener	Veterinary Attendant		Showcard Writer
F	Elevator Operator		Messenger Boy	Yardman	Dairy Hand	Non Technical Helper		

APPENDIX V

INTEREST FACTORS AND CLASSIFICATION BY PRIMARY FOCUS

(from Roe A. The psychology of occupations. New York: Wiley, 1956.)

ROE'S CLASSIFICATION	VERNON	THURSTONE	DARLEY	STRONG	KUDER	GUILDFORD et al.
a. Service	Social Welfare Vs Administrative Gregarious Vs Isolated	People	Welfare Uplift	People	Social Service	Social Welfare
b. Business Contact	Gregarious Vs Isolated	People	Business Contact	Business Contact	Persuasive	Business
c. Organization	Administrative Vs Social Welfare	Business	Business Detail	Business System	Clerical Computation	Business Clerical
d. Technology	Scientific Vs Display Isolated Vs Gregariousness	Science	Technical	Things Vs People	Scientific Mechanical Computational	Scientific Mechanical
e. Outdoor	Active Vs Verbal	-	-	-	Outdoor	Physical Drive Preference for Outdoor
f. Science	Scientific Vs Display Isolated Vs Gregariousness	Science	Technical	Things Vs People	Scientific	Scientific
g. General Cultural	Verbal Vs Active	Language	Verbal	Language	Literary	Cultural
h. Arts and Entertainment	Display Vs Scientific	Language	Verbal	Language	Artistic Literary Musical	Aesthetic Expression Aesthetic Appreciation Cultural Physical Drive (in some) Active Vs Verbal

APPENDIX VI

MODEL ORIENTATIONS FOR SIX PERSONALITY TYPES

(from HOLLAND, J.L.: Some explorations of theory of vocational choice. Psychol. Monogr., 1962, 76, 1-49. Whole No. 545.)

Realistic The model type is masculine, physically strong, unsociable, aggressive; has good motor coordination and skill; lacks verbal and interpersonal skills; prefers concrete to abstract problems; conceives of himself as being aggressive and masculine and as having conventional political and economic values. Labourers, machine operators, aviators, farmers, truck drivers and carpenters resemble this type.

Intellectual The model type is task oriented, intraceptive, asocial; prefers to think through rather than act out problems; needs to understand; enjoys ambiguous work tasks; has unconventional values and attitudes; is anal as opposed to oral. Physicists, anthropologists, chemists, mathematicians and biologists resemble this type

Social The model type is sociable, responsible, feminine, humanistic, religious; needs attention; has verbal and interpersonal skills; avoids intellectual problem solving, physical activity and highly ordered activities; prefers to solve problems through feelings and interpersonal manipulations of others; is orally dependent. Social workers, teachers, interviewers, vocational counsellors and therapists resemble this type.

Conventional The model type prefers structured verbal and numerical activities and subordinate roles; is conforming (extraceptive); avoids ambiguous situations and problems involving interpersonal relationships and physical skills; is effective at well-structured tasks; identifies with power; values material possession and status. Bank tellers, secretaries, bookkeepers and file clerks resemble this type

Enterprising The model type has verbal skills for selling, dominating, leading; conceives of himself as a strong, masculine leader; avoids well-defined language or work situations requiring long periods of intellectual effort; is extraceptive; differs from the Conventional type in that he prefers ambiguous social tasks and has a greater concern with power, status and leadership; is orally aggresive. Salesmen, politicians, managers, promoters and business executives resemble this type.

Artistic The model type is asocial; avoids problems which are highly structured or require gross physical skills; resembles the Intellectual type in being intraceptive and asocial; but differs from that type in that he has a need for individualistic expression, has less ego strength, is more feminine and suffers more frequently from emotional disturbance; prefers dealing with environmental problems through self-expression in artistic media. Musicians, artists, poets, sculptors and writers resemble this type

APPENDIX VII

DIMENSIONS OF WORK

(Summarised from BORDIN, E.S. et al.: An articulated framework for vocational development. J. counsel. Psychol., 1963, 10, 107-116.)

Dimension	Activities involving:-
Nurturant (Feeding and fostering)	the care of living things - feeding, protecting and promoting the growth of people, animals and plants, both literally with food and shelter and symbolically with words.
Oral aggressive (Cutting, biting, devouring)	the teeth and the satisfactions to be had from biting, chewing and devouring, with impulse translation in the direction of activities such as use of cutting, grinding and drilling tools; biting and cutting words and ideas.
Manipulative (Physical and interpersonal)	power over (1) physical objects ranging from grasping to the machinery of technology (2) people in various forms such as influencing, persuading, threatening, etc.
Sensual (Sight, sound, touch)	use of the sense organs, not for gaining information, but for sensual pleasure as, for example, with the artist "whose senses are exquisitely sharpened and whose work is the giving of such pleasures to other people".
Anal (Acquiring, ordering, hoarding, smearing)	the holding onto or letting go of objects, hoarding, ordering in space and time; impulses toward smearing and cleanliness.
Genital (Erection, penetration and impregnation)	erection of structures, both physical and theoretical; intrusive operations such as probing into space, earth and the sea as well as penetrations of a more abstract nature; and impregnation of the soil, e.g., agricultural occupations and in a more abstract way the creative worker

	who refers to impregnation with ideas and giving birth to artistic products.
Exploratory (Sight, touch, sound)	the use of the sense organs for gaining information, an activity basic to every scientific endeavour, the field of interest differing only in the object toward which curiosity is directed and "the degree to which it is displaced from the original objects of one's body and one's parents".
Flowing-quenching	originally urethral concerns and finding adult expression in such things as plumbing, fire fighting, hydraulic engineering, etc
Exhibiting	"showing off" in the child and later in adulthood the exhibition of body and intellectual and artistic achievements in occupations such as acting, law, advertising, etc.
Rythmic movement	originally associated with physiological rhythms and finding adult expression in musical occupations or in industrial, craftsmanlike or artistic occupations that involve bodily rhythm or its abstract equivalents.

N.B. Bordin et al. comment that a final list of dimensions may differ slightly from the foregoing.

Harvard Studies in Career Development

APPENDIX VIII

* 1. Tiedeman, David V.; and Sternberg, Jack J. Information Appropriate for Curriculum Guidance, October, 1951. (Also reported in Harvard Educational Review, 1952, 22(4), 237-274.)

* 2. Tiedeman, David V.; and Bryan, Joseph G. Prediction of College Field of Concentration, Spring, 1954. (Also reported in Harvard Education Review, 1854, 24, 122-139.)

3. Tiedeman, David V.; and O'Hara, Robert P. Preparedness and the Freedom to Choose One's Occupation, March, 1957. (Also reported in Gruber, F. D. (Ed.) The Good Education of Youth. Philadelphia: University of Pennsylvania Press, 1957, 229-248.)

* 4. French, Wendell L. "Can a Man's Occupation Be Predicted?" Reported only in Journal of Counseling Psychology, 1959, 6(2), 95-99.

* 5. Dunn, Frances E. "Two Methods of Predicting the Selection of a College Major." Reported only in Journal of Counseling Psychology, 1959, 6(1), 15-26.

6. Tatsuoka, Maurice M. Joint-Probability of Membership and Success in a Group: An Index which Combines the Information from Discriminant and Regression Analyses as Applied to the Guidance Program, October, 1957.

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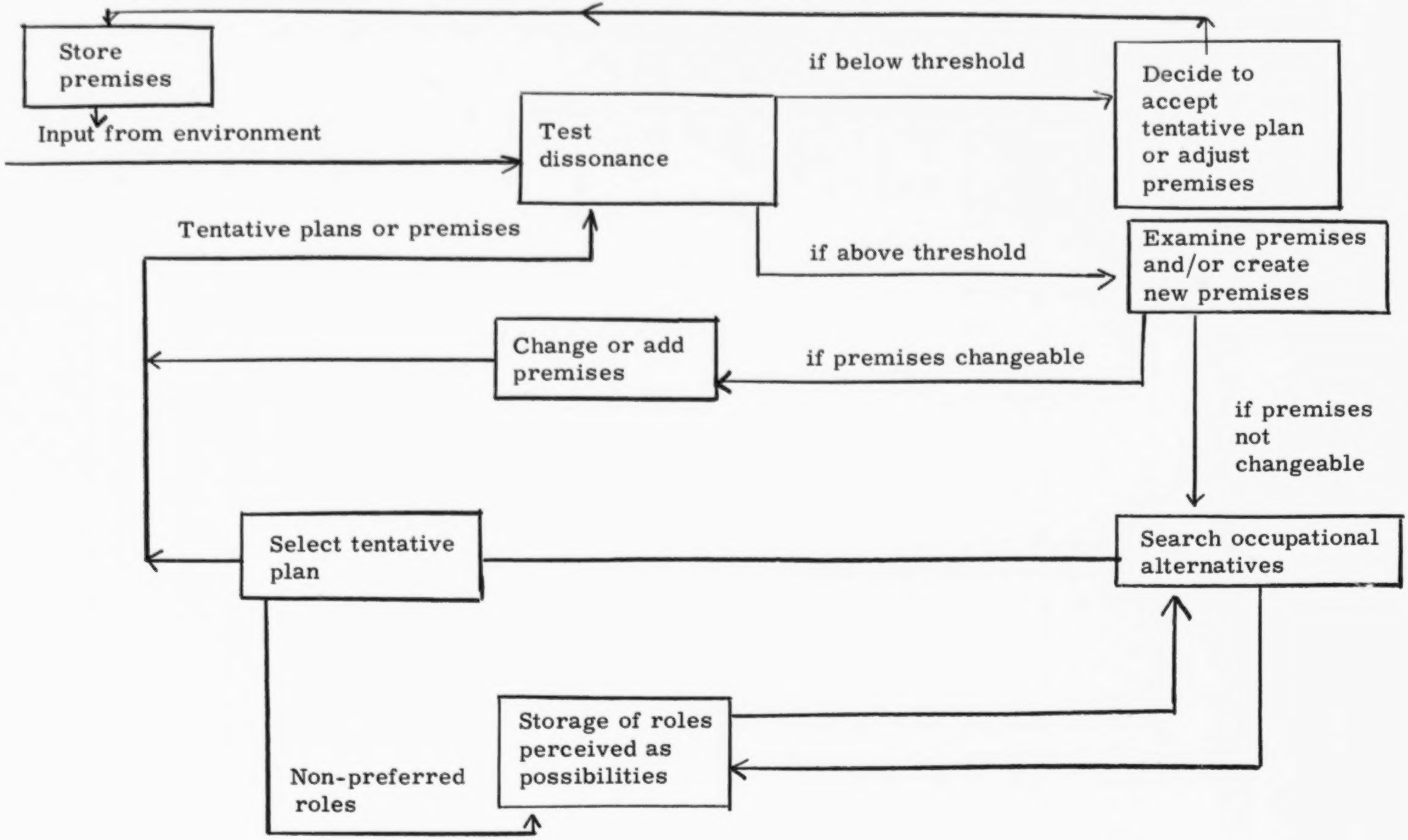
* Refers to studies included in this report.

APPENDIX IX

COGNITIVE DISSONANCE CAREER DECISION MAKING MODEL

(Extract from Hilton J.L. Career decision making. *J. counsel.* Psychol., 1962, 8, 291-298).


Store premises
Input from environment
Test dissonance
if below threshold
Decide to accept tentative plan or adjust premises
Tentative plans or premises
if above threshold
Examine premises and/or create new premises
Change or add premises
if premises changeable
if premises not changeable
Select tentative plan
Search occupational alternatives
Storage of roles perceived as possibilities
Non-preferred roles

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